252

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DENVER, COLORADO

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 12 SET 241

Ch. V-2250-1

In later production of Westinghouse Ch. V-2250-1 the following changes were made. Chassis may incorporate any or all of these changes.

HORIZONTAL CIRCUIT REVISED

The cathode resistor (R78) of V7 and V13 was changed from 2.2KΩ to 1.2KΩ. This change was made to reduce horizontal jitters.

To speed the retrace time R104 was changed from 18KΩ to 33KΩ and C99 was removed.

To reduce the plate dissipation in the horizontal output tube (V18) the cathode resistor was changed from a single 33Ω resistor to three 470Ω resistors, connected in parallel.

These changes are shown on the schematic in Photofact Folder 12, Set 241.

TO REDUCE B+ VOLTAGES

A 50Ω, 10 watt,resistor (R124) was added between the filter choke (L41) and the junction of T6, R122 and C1B.

This resistor is shown in Photofact Folder 12, Set 234.

NEW AUDIO OUTPUT TRANSFORMER

Sound in the picture, caused by radiation from the audio output transformer to the horizontal oscillator coil (L37), was reduced by changing the audio output transformer to part number V-14080-2. The windings in this transformer are on a plane parallel with the chassis, which reduces the induced field of the transformer.

TO ELIMINATE HORIZONTAL RINGING

C110, connected in series with R99, across terminals 3 and 7 of the deflection yoke, was changed from 100MMF to an 82MMF, ± 5%, 3000 volt,capacitor (part number V-10710-8).

TO IMPROVE AGC PERFORMANCE

To improve the AGC action on strong signals and provide a greater range of settings, the AGC control (R10) was changed to 750KΩ (part number V-12272-1).

TO ELIMINATE BARKHAUSEN OSCILLATIONS

An ion trap (part number V-9784-6) was added around the 6CD6G, horizontal output tube. This ion trap should be rotated around the tube until oscillations disappear.

Ch. V-2250-4

Chassis V-2250-4 is used in later production of models H-815K24 and H-817K24. This chassis is identical to chassis V-2250-1, except, a different VHF tuner (part number V-12400-1) is used and most of the production changes listed above are included. In addition, a .005MFD capacitor is added from the plates (pin 5) of the damper tubes (V19 and V20) to ground.

A schematic of this tuner is given on the reverse side.

WESTINGHOUSE MODELS H-795T27, H-795TU27 (Ch. V-2250-1), H-815T24, H-815TU24, H-817K24, H-817KU24 (Ch. V-2250-1, -4)

(Continued on the Reverse Side)

PRODUCTION CHANGES
BULLETIN 105

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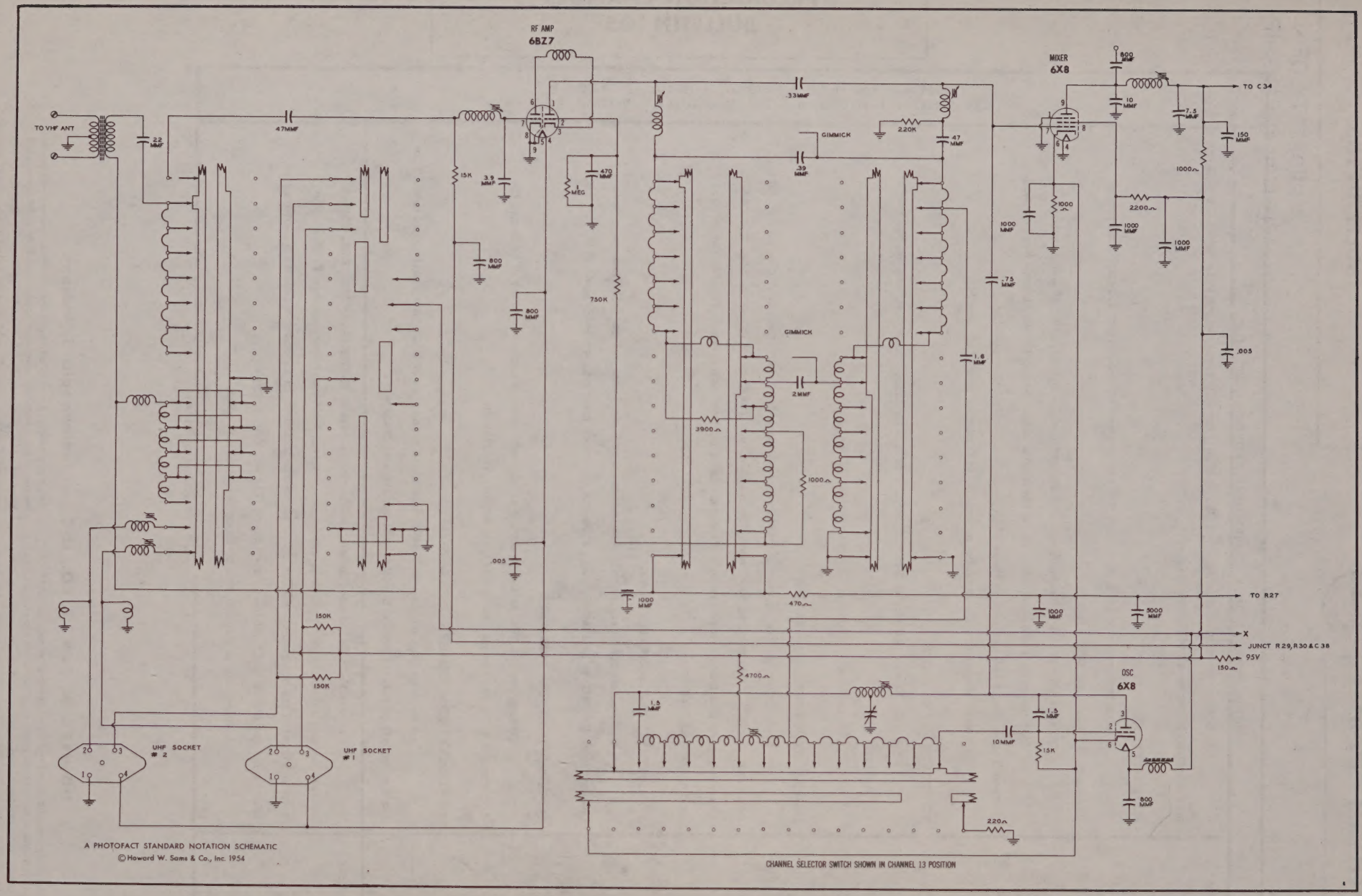
RF AMP
6BZ7
MIXER
6X8
OSC
6X8
TO VHF ANT
.22 MMF
47MMF
15K
3.9 MMF
470 MMF
1 MEG
800 MMF
750K
.33MMF
GIMMICK
220K
47 MMF
.39 MMF
GIMMICK
.75 MMF
1.8 MMF
2MMF
3900Ω
1000Ω
.005
1000 MMF
470Ω
TO C34
900 MMF
10 MMF
7.5 MMF
150 MMF
1000Ω
2200Ω
1000 MMF
1000 MMF
1000 MMF
1000 MMF
.005
TO R27
1000 MMF
5000 MMF
X
JUNCT R29,R30&C38
95V
150Ω
150K
150K
4700Ω
1.5 MMF
1.5 MMF
10 MMF
15K
800 MMF
220Ω
UHF SOCKET #2
UHF SOCKET #1
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

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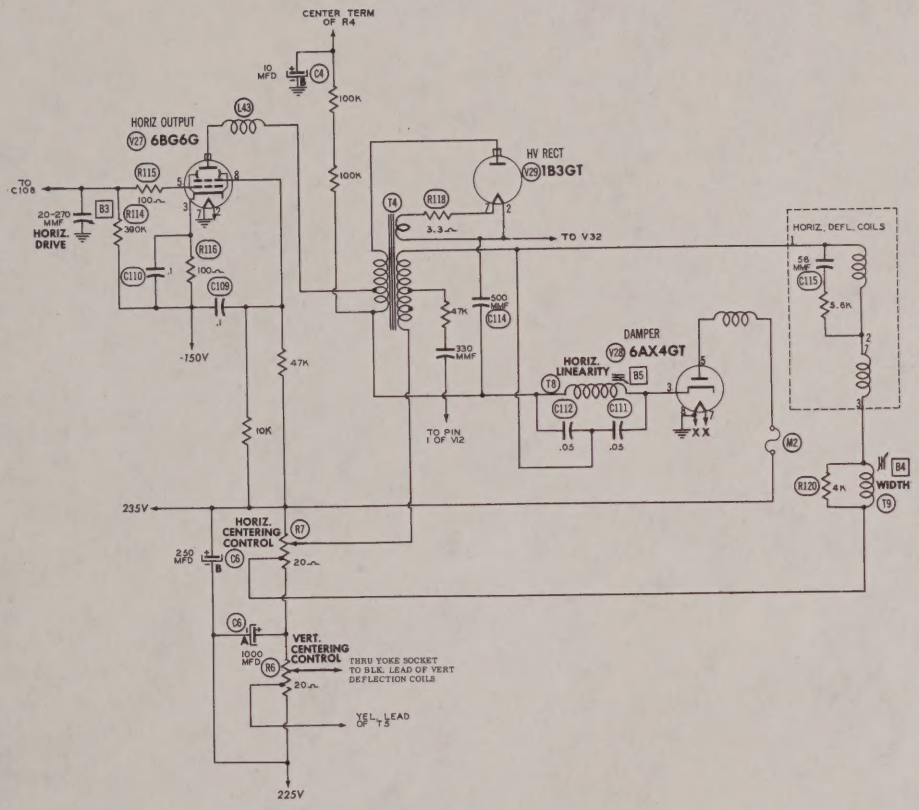
SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 7 IN SET 243

Series 27000

Mattison Series 27000 chassis used in later production of models 630DXM and 630MDXL is identical to the Series 26000 chassis, covered in Photofact Folder 7, Set 243, except the horizontal output circuit was revised.

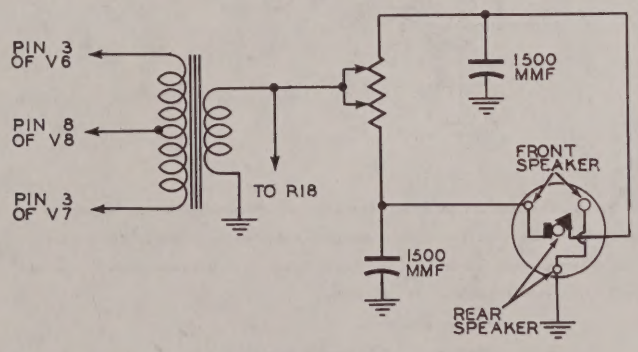
A partial schematic is given below which shows this circuit.



SUPPLEMENTAL DATA TO PHOFOFACT FOLDER 5 SET 109

Lincoln model GL892 (OL-18805-A) and Mercury model GM891 (OM-18805-A) are identical to Ford model GF890 (OA-18805-B) covered in Photofact Folder 5, Set 109, except for the following:

A dual speaker control was added in models GL892 and GM891. A partial schematic showing this circuit is given below. The part number for the dual speaker control is 63-2085.

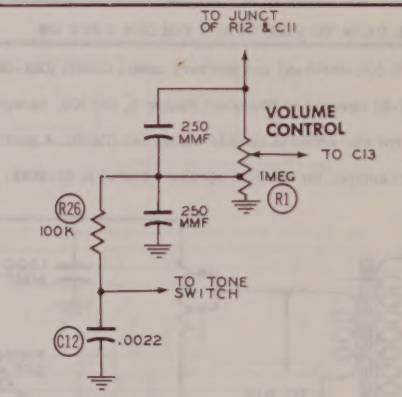


The tone control was revised as follows:

C12 was changed from .0056MFD to .0022MFD.

A 250MMF capacitor was added from the tap of the volume control (R1) to each side of the control A partial schematic showing this revised circuit is given on the reverse side.

(Continued on the Reverse Side)



The volume control and tone switch was changed to part number 63-2094 and the tuner unit was changed to part number S-16253 for model GL892 and to S-16254 for model GM891. These units are electrically identical to the unit used in model GF890. The following procedure should be followed for push-button adjustment in models GL892 and GM891.

1. Turn the set on and allow to warm-up.
2. Pull the push button to the left and outwards to unlock.
3. Tune manually to desired station.
4. Press push button all the way in to lock.
5. Repeat the above procedure for the remaining push buttons.

PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

AMC MODELS 20CD2B, 20C2B, 20T2B, 21CD2A, 21C2A

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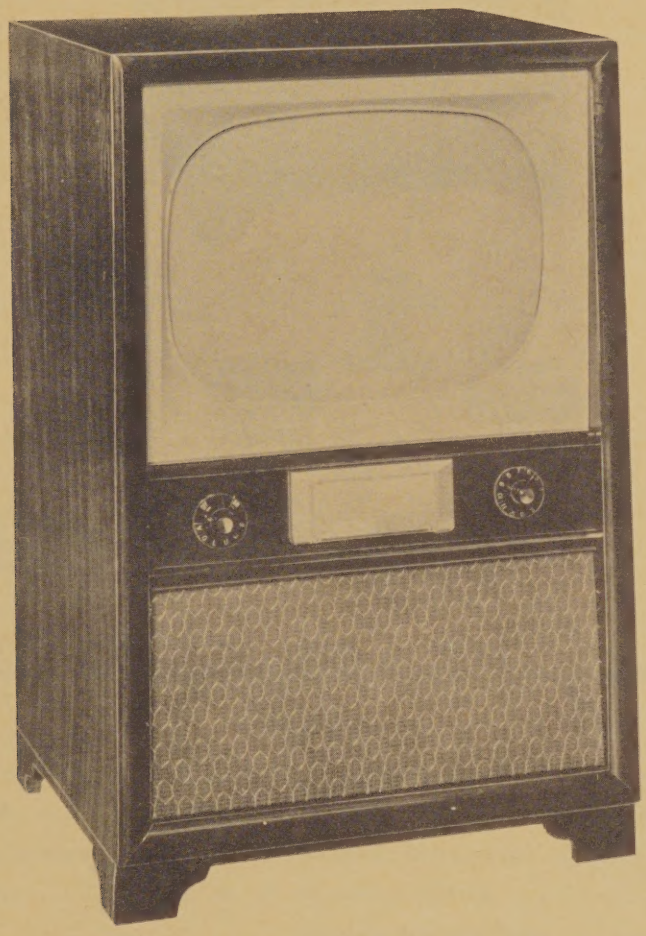
Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



MODEL 21C2A

AMC MODELS 20CD2B, 20C2B, 20T2B, 21CD2A, 21C2A

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DATE 9-54 SET 252 FOLDER 2

PHOTOFACT* Folder
*TRADE MARK

AMC MODELS 20CD2B, 20C2B, 20T2B, 21CD2A, 21C2A

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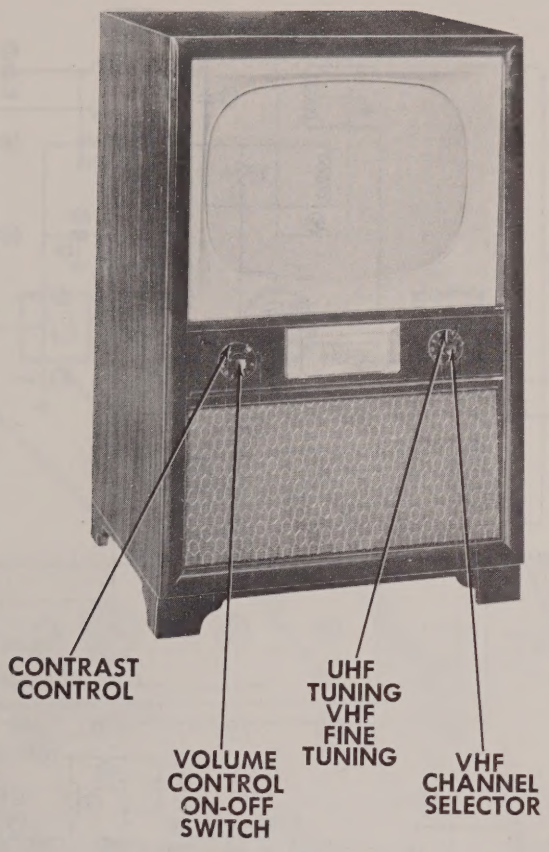

AMC MODEL 21C2A

TRADE NAME	AMC Models 20CD2B, 20C2B, 20T2B, 21CD2A, 21C2A
SUPPLIER	Aimcee Wholesale Corp., 1440 Broadway, New York 18, N. Y.
TYPE SET	Television Receiver
TUBES	Twenty-one

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.74 Amp. @ 117 Volts AC
TUNING RANGE— Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 25.75MC, Sound IF 21.25MC (Intercarrier)

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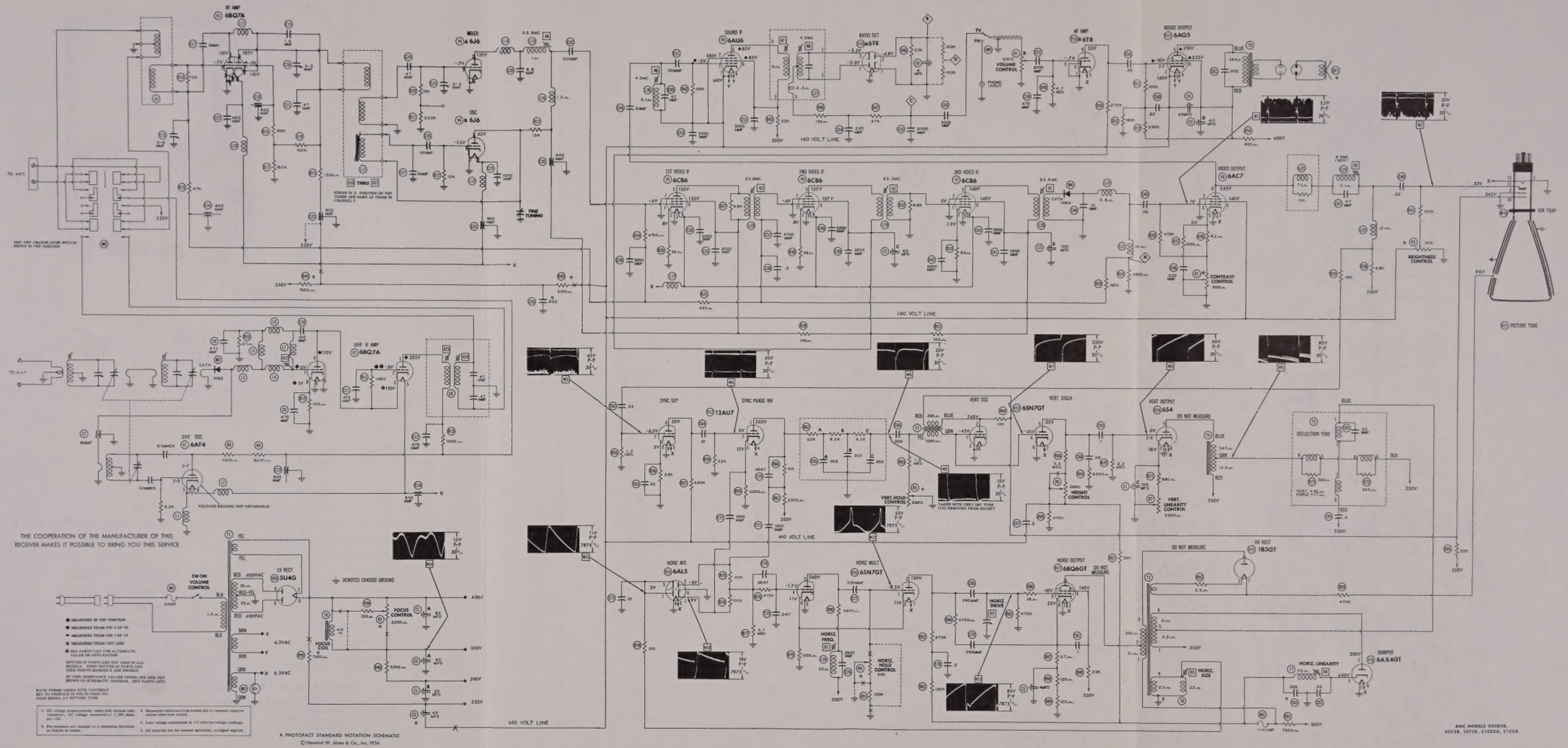
DATE 9-54 SET 252 FOLDER 2

AMC MODELS 20CD2B, 20C2B, 20T2B, 21CD2A, 21C2A


AMC MODELS 20CD2B, 20C2B, 20T2B, 21CD2A, 21C2A
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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140 VOLT LINE
DENOTES CHASSIS GROUND
PICTURE TUBE
DEFLECTION YOKE
ION TRAP
BRIGHTNESS CONTROL
CONTRAST CONTROL
VOLUME CONTROL
HEIGHT CONTROL
VERT. LINEARITY CONTROL
VERT. HOLD CONTROL
HORIZ. HOLD CONTROL 50K
HORIZ. FREQ.
HORIZ. DRIVE
HORIZ. SIZE
HORIZ. LINEARITY
FOCUS CONTROL
FOCUS COIL
FINE TUNING
SW ON VOLUME CONTROL
DO NOT MEASURE
TAKEN WITH VERT OSC TUBE (V8) REMOVED FROM SOCKET
VOLTAGE READING NOT OBTAINABLE
UHF-VHF CHANGE-OVER SWITCH SHOWN IN VHF POSITION
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 90 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
RF AMP V1 6BQ7A
MIXER V2a 6J6
OSC V2b 6J6
UHF OSC V7 6AF4
UHF IF AMP V7 6BQ7A
SOUND IF V6 6AU6
RATIO DET V10a 6T8
AF AMP V10b 6T8
1ST VIDEO IF V5 6CB6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V3 6CB6
VIDEO OUTPUT V9 6AC7
SYNC SEP V12a 12AU7
SYNC PHASE INV V12b 12AU7
VERT OSC V8 6SN7GT
VERT DISCH V8 6SN7GT
VERT OUTPUT V13 6S4
HORIZ AFC V11a 6AL5
HORIZ MULT V11b 6SN7GT
HORIZ OUTPUT V17 6BQ6GT
DAMPER V16 6AX4GT
HV RECT V15 1B3GT
LV RECT V14 5U4G
RIGHT OUTPUT V10 6AQ5
6.3VAC
400V
350V
300V
235V

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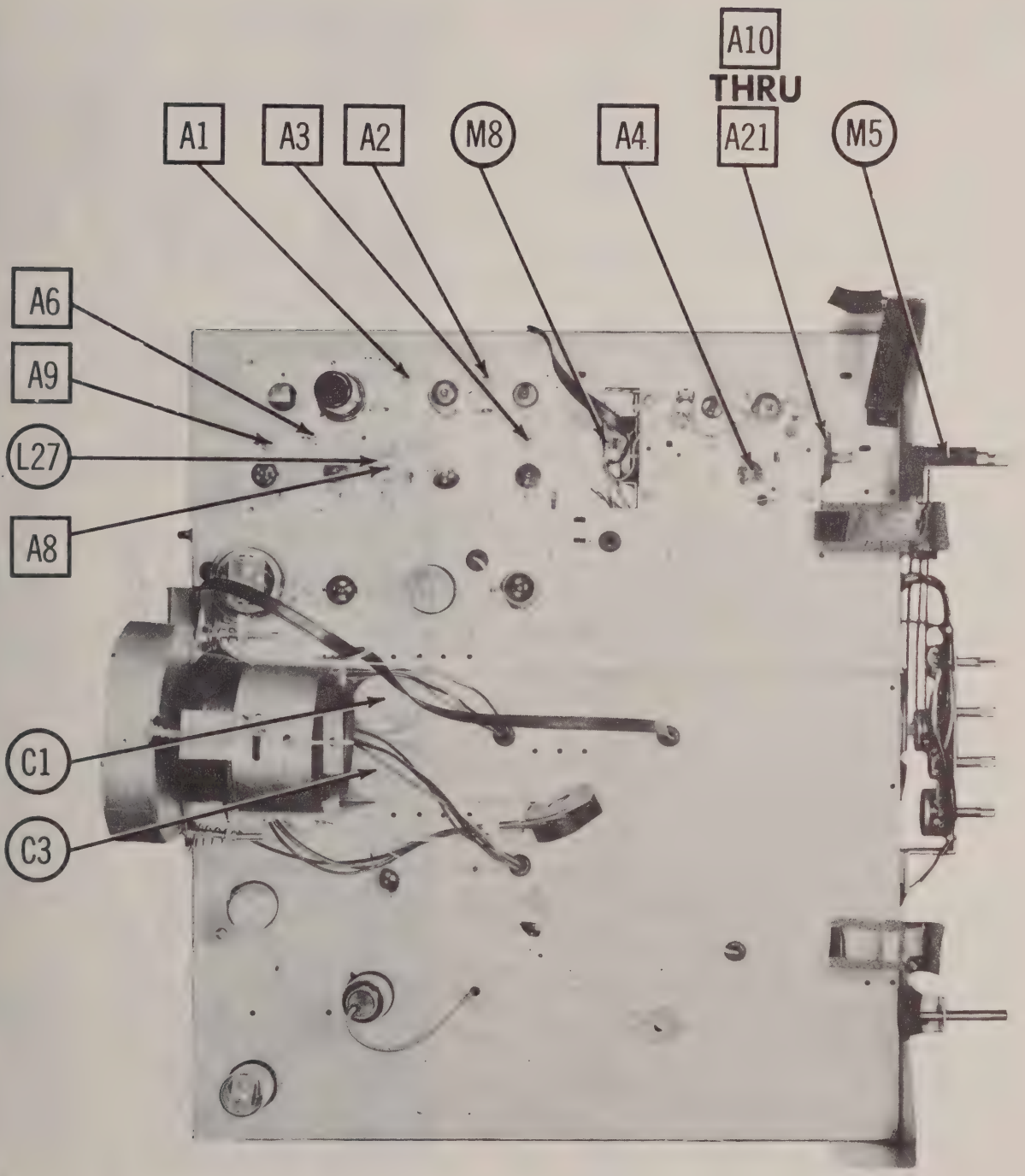

CHASSIS TOP VIEW

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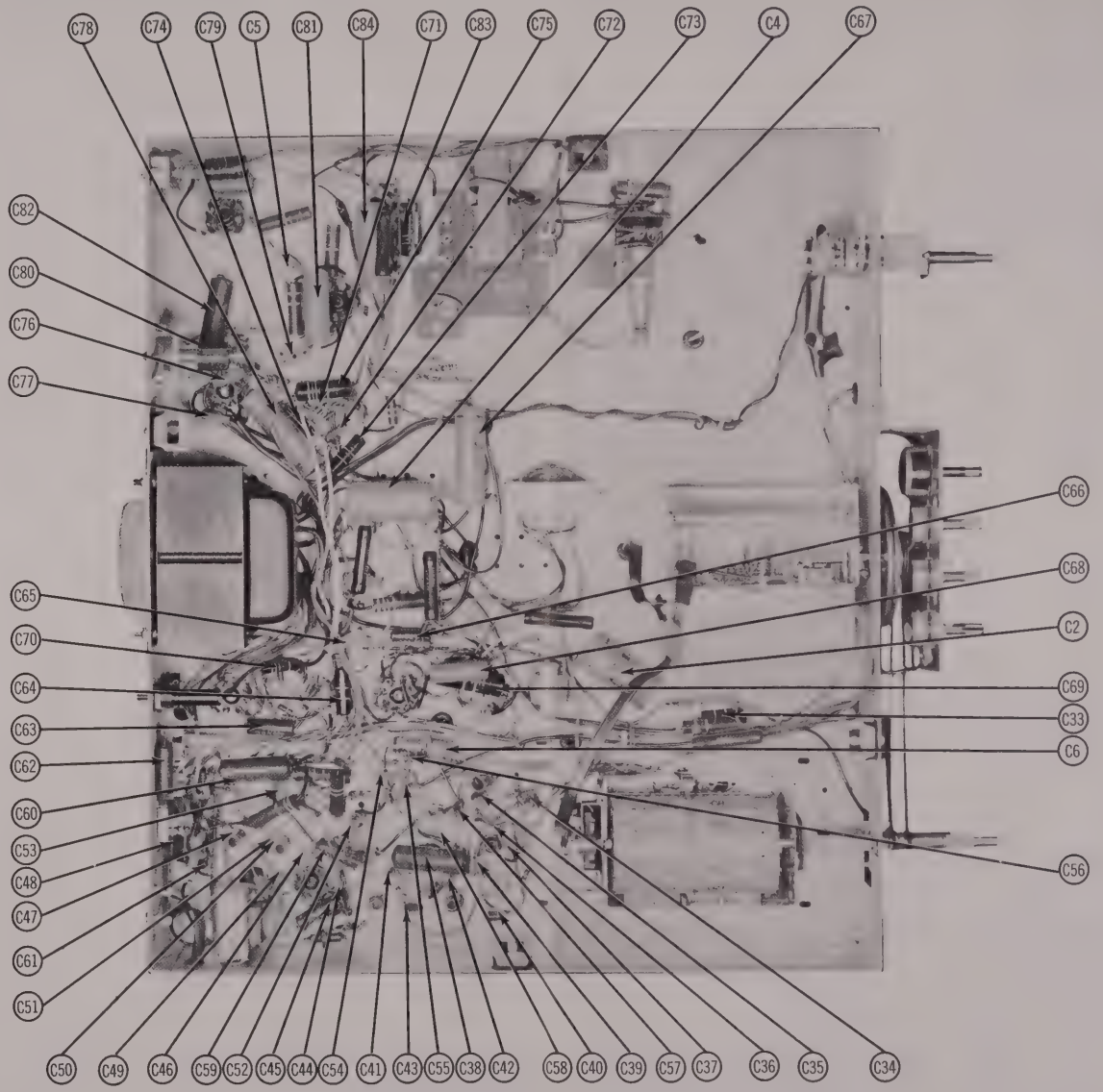

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART

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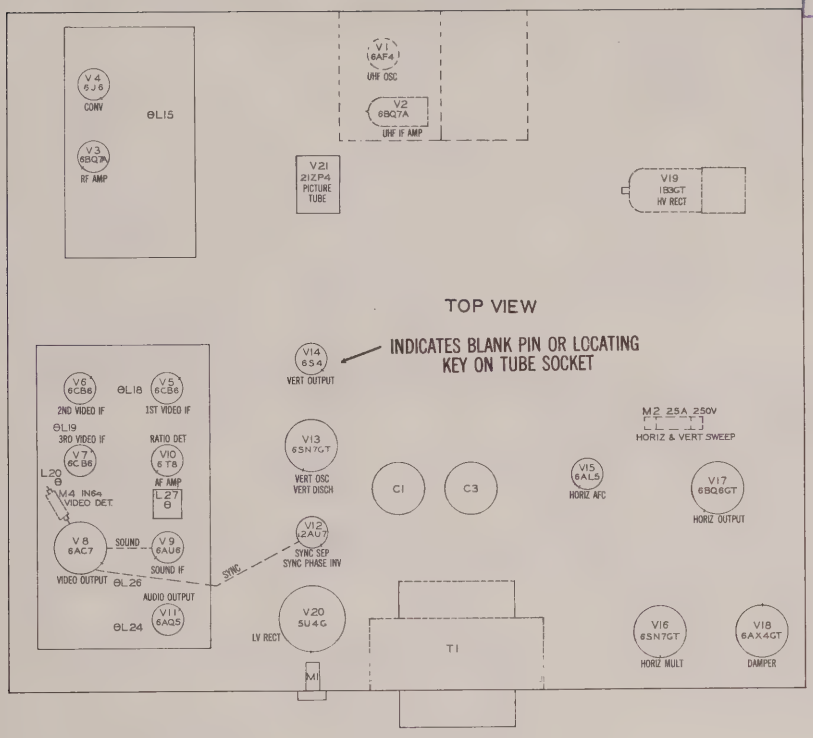

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V20, Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V4, V5, V6, V7, V8, V11 (V1, V2 UHF only)
No pic, no sound, has snow - V3, V4, V5
No pic, has sound, has raster - V8, V21
Has pic, no sound -V9, V10, V11

SYNC FAILURE
No vert. sync - V12, V13
No horiz. sync - V12, V15, V16
No vert. or horiz. sync - V12

SWEEP FAILURE
No raster, has sound - V16, V17, V18, V19, V21, Fuse (M2)
No vertical deflection - V13, V14
Poor vert. linearity or foldover - V13, V14
Poor horiz. linearity or foldover -V16, V17, V18
Narrow picture - V16, V17, V18, V19
Vert. off freq. - V12, V13
Horiz. off freq. -V12, V15, V16

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Remove the converter tube (V4) from its socket and replace with a 6J6 which has pin 1 removed .

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24.6MC (Unmod)	Any	DC probe to point (A). Common to chassis.	A1	Adjust for maximum deflection. Attenuate generator output to maintain not more than -1.5 volts at VTVM.
2.	"	"	23.3MC	"	"	A2	"
3.	"	"	25.6MC	"	"	A3	"
4.	"	"	22.8MC	"	"	A4	"
5.	"	"	21.25MC	"	"	A5	Sets that do not use the cascode tuner employ a 21.25MC trap (A5). This trap (A5) should be adjusted for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.25MC 22.5MC 23.25MC 25.75MC	Any	Vert. Amp. to point A . Low side to chassis.		Check for response curve similar to Fig.1. The 22.5MC and 25.75MC markers should be at 50% response. If necessary, retouch A1 thru A4 to obtain desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) .as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to pin 4 (grid) of 6AC7 (V8). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B) Common to chassis.	A6, A7	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point (C) Common to point (D).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 4 (grid) of 6AC7 (V8). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B) . Low side to chassis.	A6, A7	Disconnect stabilizing capacitor C6. Adjust for curve of maximum amplitude and symmetry similar to Fig. 2.
8.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A8	Reconnect stabilizing capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01MFD	High side to pin 4 (grid) of 6AC7 (V8). Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig.4) to pin 11 (cathode) of picture tube. Low side to chassis.	A9	Adjust for MINIMUM deflection.

OSCILLATOR ALIGNMENT

The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A10	Video marker should be at 50% on response curve. Place sound marker as shown in Fig. 5.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A11	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A12	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A13	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A14	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A15	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A16	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A17	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A18	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A19	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A20	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A21	

RF AND MIXER ALIGNMENT

The RF and mixer portion of this receiver has been properly aligned at the factory and is very stable .
Alignment of this portion should not be required in the field.

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ALIGNMENT INSTRUCTIONS (cont)

UHF TUNER ALIGNMENT

The following equipment is required for proper alignment:
1. A sweep generator with 30MC sweep at 82MC center frequency.
2. A signal generator with range of from 60MC to 100MC.
3. A good oscilloscope.

The following adaptors are required:
1. A balanced detector (Fig. 6).
2. A crystal simulator (Fig. 7).
3. A detector simulator (Fig.8).

When connecting adaptors use very short leads.
Remove the 1N82 crystal diode from its holding clips.
Connect the output of the signal generator to a small pickup loop to radiate the signal into the UHF converter
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CONNECT SCOPE	ADJUST	REMARKS
11.	Fig. 7.	Thru crystal simulator to 1N82 mounting clips as in Fig. 7.	82MC (30MC Swp)	95MC	Vert. Amp. thru detector (Fig.8) to pin 1 (plate) of 6BQ7A (V2). NOTE-Solder the detector lead to pin 1 terminal. Low side to chassis.	A22	Connect a short across secondary terminals 3 and 5 of L8. Adjust to place marker at 70% on high frequency side of response curve as in Fig. 9.
12.	"	"	"	69MC	"	L5, L3	Compress or expand L5 to place 69MC marker at 70% on response curve. If necessary, compress or expand L3 for symmetrical response as in Fig.9. Remove detector (Fig.8) from V2 and the short from L8.
13.	"	"	"	76MC 88MC	Vert. Amp. thru detector (Fig.6) to terminals 3 and 5 of L8.	A23, A24	Adjust for response curve similar to Fig. 10.

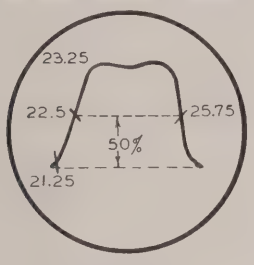


FIG. 1

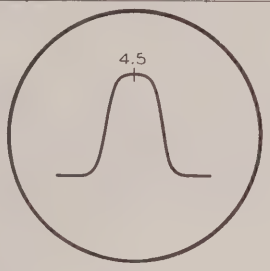


FIG. 2

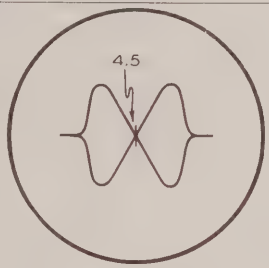


FIG. 3

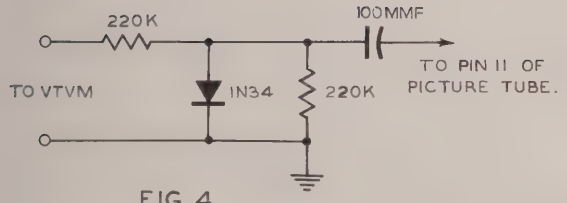


FIG. 4

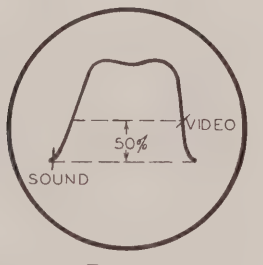


FIG. 5

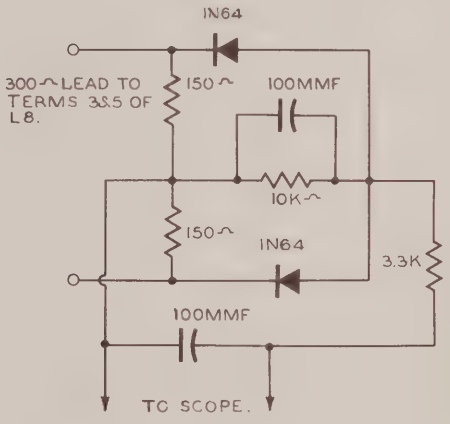


FIG. 6

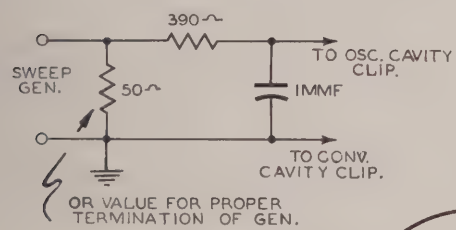


FIG. 7

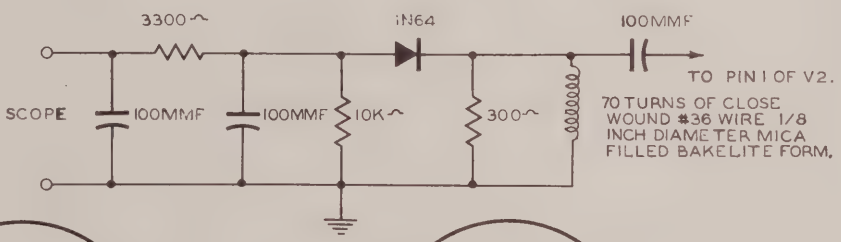


FIG. 8

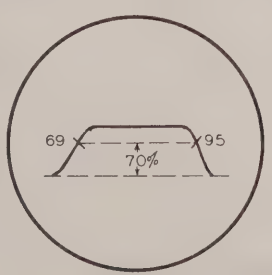


FIG. 9

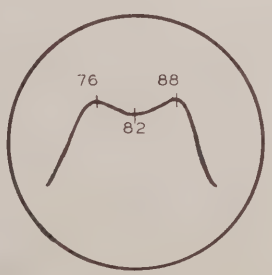
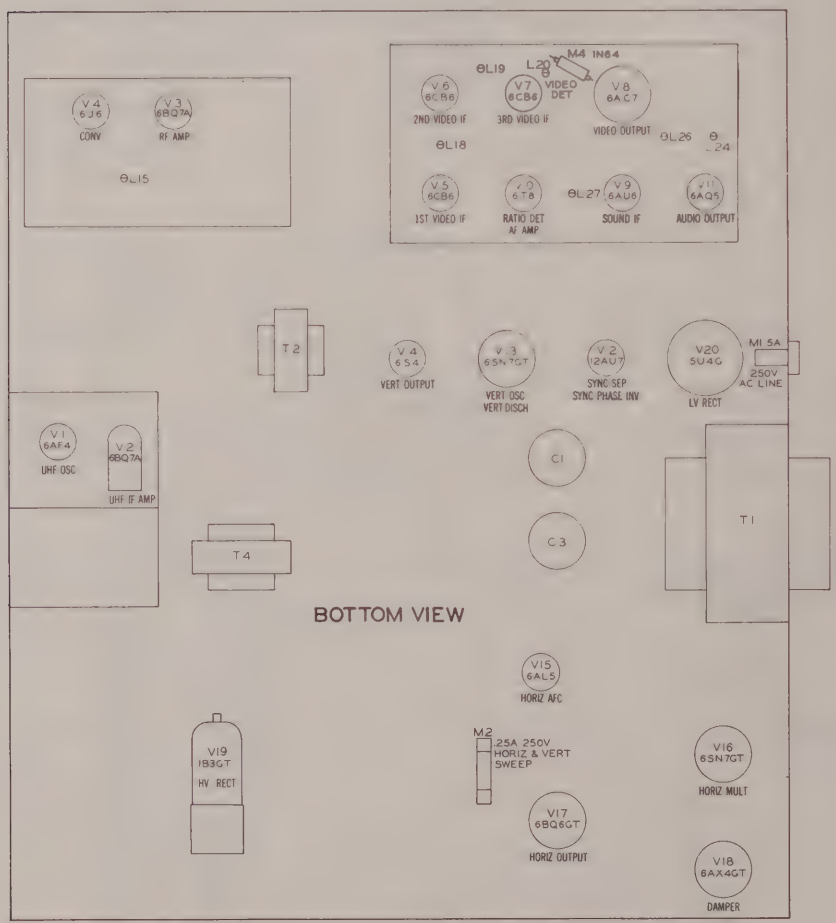


FIG. 10

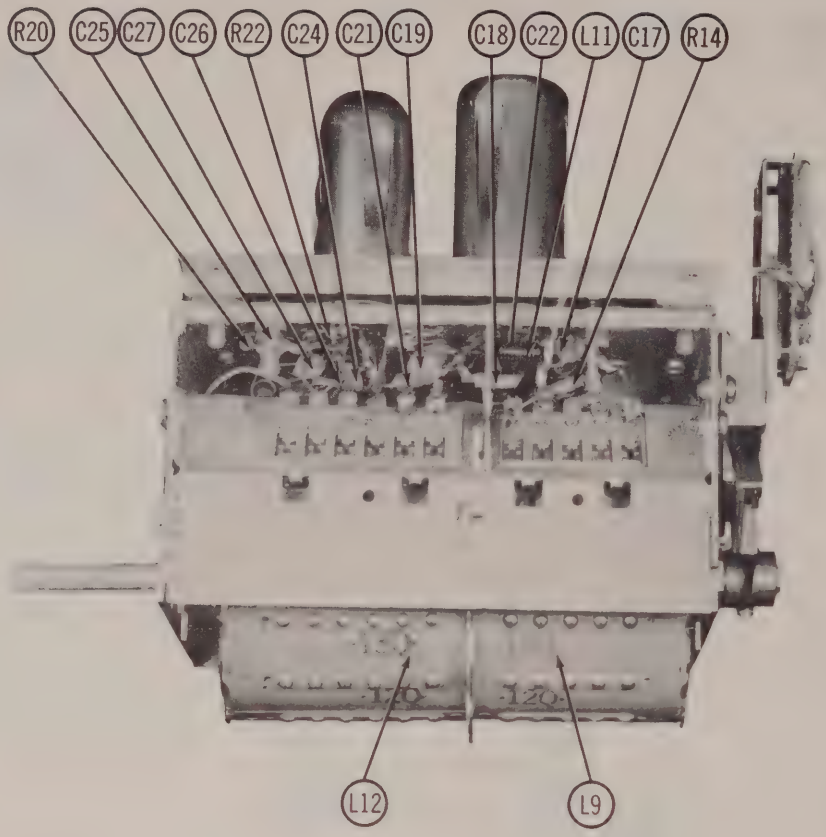
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	†♦21. 3KΩ	8. 2KΩ	0Ω	.1Ω	0Ω	8. 2KΩ	†♦21. 3KΩ		
V 2	6BQ7A	†♦8. 5KΩ	INF	INF	0Ω	.1Ω	INF	27Ω	100Ω	0Ω
V 3	6BQ7A	INF	1. 1Meg	0Ω	.1Ω	0Ω	† 9. 2KΩ	180KΩ	INF	0Ω
V 4	6J6	▲ 15. 2KΩ	▲ 200Ω	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 5	6CB6	1 Meg	56Ω	0Ω	.1Ω	▲ 200Ω	▲ 200Ω	0Ω		
V 6	6CB6	1 Meg	56Ω	0Ω	.1Ω	▲ 100Ω	▲ 100Ω	0Ω		
V 7	6CB6	.3Ω	82Ω	0Ω	.1Ω	▲ 0Ω	▲0Ω	0Ω		
V 8	6AC7	0Ω	0Ω	0Ω	470KΩ	160Ω	▲ 0Ω	.1Ω	† 10. 3KΩ	
V 9	6AU6	▲ 100KΩ	▲ 0Ω	▲ 0Ω	▲ .1Ω	† 22. 2KΩ	† 22. 2KΩ	▲ 0Ω		
V 10	6T8	INF	27KΩ	INF	0Ω	.1Ω	0Ω	0Ω	4. 7 Meg	▲ 270KΩ
V 11	6AQ5	230KΩ	25KΩ	▲ 0Ω	▲ .1Ω	† 1. 2KΩ	† 800Ω	230KΩ		
V 12	12AU7	† 17. 4KΩ	22KΩ	2. 2KΩ	.1Ω	.1Ω	▲ 680KΩ	1. 2 Meg	22KΩ	0Ω
V 13	6SN7GT	2. 7 Meg	▲22. 2KΩ	0Ω	2. 7 Meg	▲ 4. 5 Meg	0Ω	.1Ω	0Ω	
V 14	6S4	INF	1. 6 KΩ	2. 2 Meg	.1Ω	0Ω	2. 2 Meg	INF	INF	† 1. 2KΩ
V 15	6AL5	4. 8 Meg	4. 8 Meg	.1Ω	0Ω	15KΩ	0Ω	15KΩ		
V 16	6SN7GT	130KΩ	▲ 390KΩ	1. 5KΩ	5. 2Meg	† 9. 6KΩ	1.5KΩ	.1Ω	0Ω	
V 17	6BQ6GT	INF	.1Ω	INF	† 25KΩ	470KΩ	470KΩ	0Ω	267Ω	TOP CAP ▲ 43Ω
V 18	6AX4GT	INF	INF	† 8KΩ	INF	† 240Ω	INF	0Ω	.1Ω	
V 19	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								TOP CAP ▲ 393Ω
V 20	5U4G	INF	35KΩ	INF	35Ω	INF	35Ω	INF	35KΩ	
V 21	21EP4	0Ω	0Ω	PIN 10 † 22. 2KΩ	PIN 11 ▲ 130KΩ	PIN 12 .1Ω				

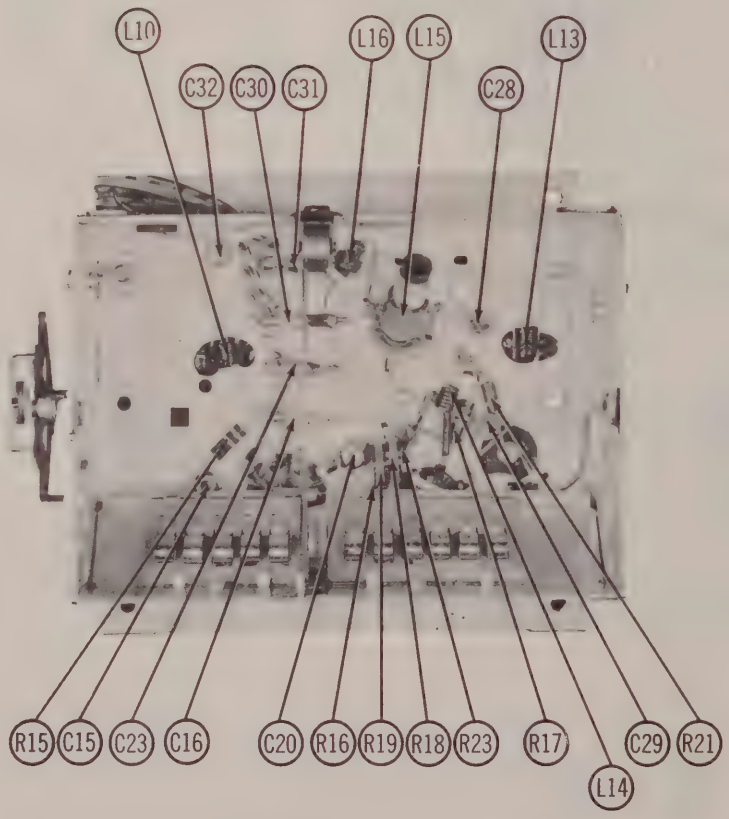
♦ MEASURED IN UHF POSITION.
† MEASURED FROM PIN 8 OF V20.
▲ MEASURED FROM 140 VOLT LINE.
▲ MEASURED FROM PIN 3 OF V18.



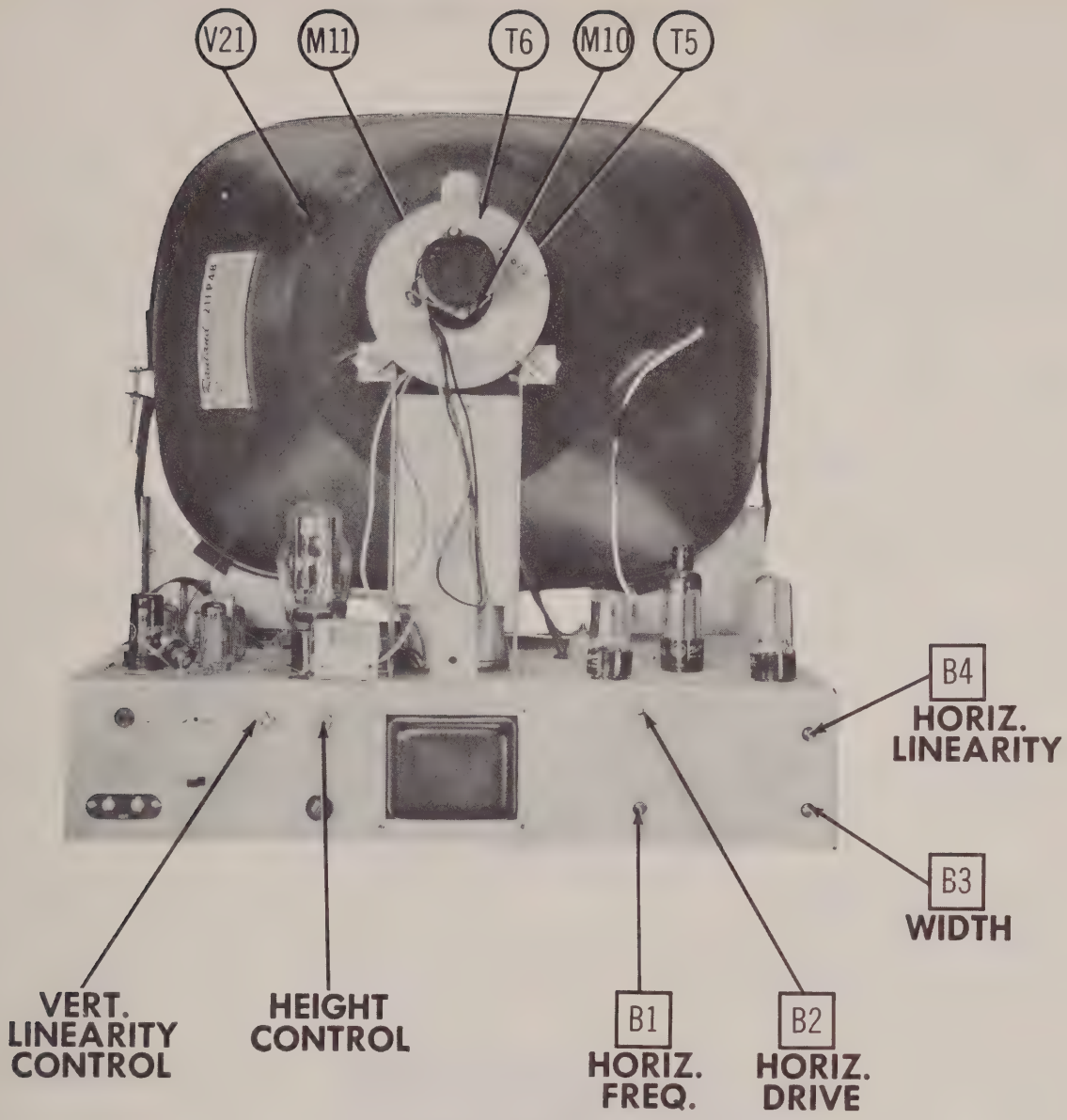
TUBE PLACEMENT CHART



VHF TUNER-RIGHT SIDE



VHF TUNER-BOTTOM VIEW



CHASSIS—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to its mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) clockwise as far as possible without the presence of vertical white lines or compression near the center of the picture.

Adjust the horizontal size slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

A slight readjustment of B2 may be necessary to obtain optimum results.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V16, V17, V18 and V20. Check adjustments B2, B3 and B4. Check waveform W13.

If Satisfactory	If Unsatisfactory
Check T3, T5A, R90, C81, C84, C82, C83, R91 and other associated components.	Check R85, R82, R80, R79, C77, C80 and other associated components.

DRIVE LINES

Check adjustment B2. Check by substitution V16, V17 and V18. Check T3, T5A, C82, C83, C85, C79, C80, R84, R85 and other associated circuit components.

COMPRESSED LEFT SIDE

Check adjustments B2, B3, and B4. Check by substitution V16, V17 and V18. Check components associated with the horizontal output and damper stages especially T3 and T5A.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check C75 for open. Check V17, V18, T3, T5A, T7 and T8 for internal arcing.

XMAS TREE EFFECT

Substitute V16. Check adjustments B1 and B2. Check L28, C76, C77 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V13 and V14. Check waveform W8.

If Satisfactory	If Unsatisfactory
Check T4, R5B, R71, R7 and other associated components.	Check R6, R66, R70, C69, T2 and other associated components.

INSUFFICIENT SWEEP

Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Check by substitution V13 and V14. Check T4, T5B, C1C and other associated circuit components.

COMPRESSED AT TOP

Check by substitution V13 and V14. Check T2, C68, C69, R66, R69, R70 and other associated components.

FOLDS

Check by substitution V13 and V14. Check associated components for failure or change of value.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Substitute V12. Check R55, R56, R59, R60, C62, C63, C64, C70 and other associated circuit components.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Check by substitution V12 and V13. Check waveform W5.

If Satisfactory	If Unsatisfactory
Check components associated with V13 especially T2 and R63.	Check vertical integrator and other associated components. Check the video and IF stages for overloading.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V15 and V16. Check waveform W10.

If Satisfactory	If Unsatisfactory
Check components associated with V16 especially C76 and C77.	Check C71, C72, R74 and R75.

HORIZONTAL BENDING

Check by substitution V15, V16 and V17. Check horizontal AFC filter network for component failure or change of value.

VIDEO

LOSS OF VIDEO

Substitute V8. Check video detector crystal and assembly. Check picture tube and components associated with V8.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best picture and sound. Check adjustment A9 and video IF alignment.

POOR CONTRAST

Substitute V8. Check video detector crystal. Check contrast control, picture tube and other associated circuit components.

NEGATIVE PICTURE

Check by substitution V8, V6, V5 and V3. Check video detector crystal. Check AGC network. Check picture tube.

SMEAR

Substitute V8. Check video detector crystal, C45, C48, R35, R38, R41, L21, L22, L23, L25, picture tube and other associated circuit components.

WIDE BLACK BAR ACROSS PICTURE

Check V3, V5, V6, V7 and V8 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V9, V10 and V11. Check stages V10B and V11 using audio signal generator. Apply audio signal across R49.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check R50, R51, R52, R53, C59, C61, T9 and other associated components.

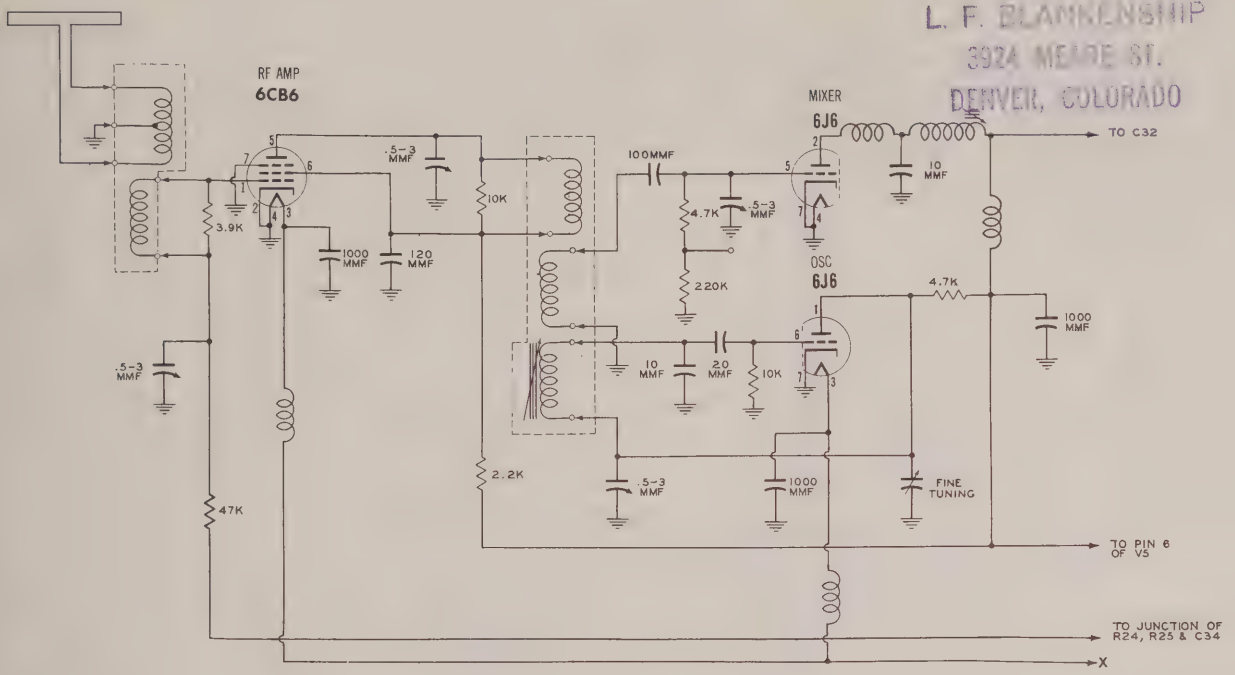
BUZZ

Adjust tuner fine tuning for best picture and sound. Adjust A8 for minimum buzz. If still unsatisfactory, substitute V10 and realign ratio detector and audio IF stages.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



ALTERNATE VHF TUNER USED IN SOME MODELS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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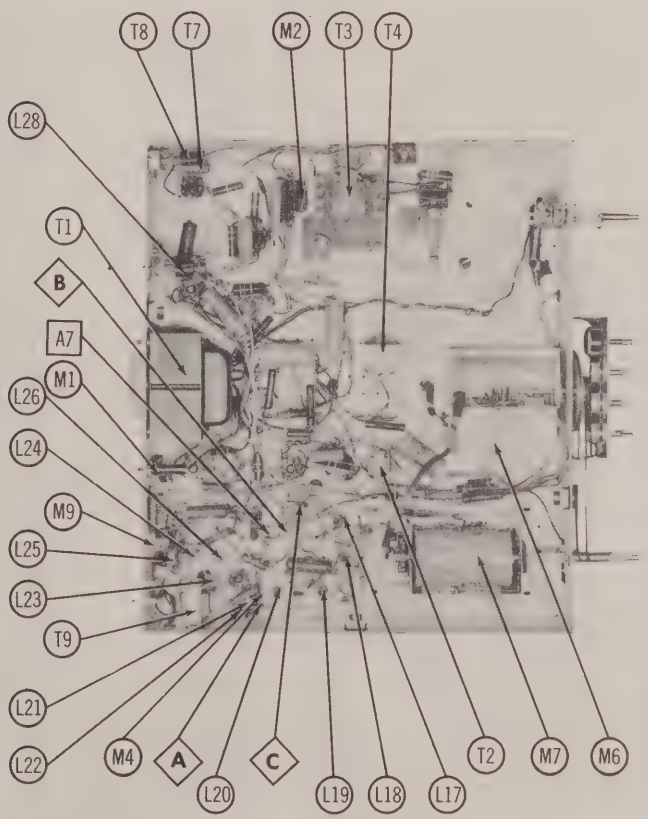
ALTERNATE TUNER SCHEMATIC



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: AMC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	UHF Oscillator	6AF4	6AF4	7DK	
V2	UHF IF Amplifier	6BQ7A	6BQ7A	9AT	
V3	RF Amplifier	6BQ7A	6BQ7A	9AJ	
V4	Converter	6J6	6J6	7BF	
V5	1st. Video IF Amp.	6CB6	6CB6	7CM	
V6	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V7	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V8	Video Output	6AC7	6AC7	8N	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector-AF Amplifier	6T8	6T8	9E	
V11	Audio Output	6AQ5	6AQ5	7BZ	
V12	Sync Separator - Sync Phase Inv.	12AU7	12AU7	9A	
V13	Vert. Oscillator-Vert. Discharge	6SN7GT	6SN7GT	8BD	
V14	Vert. Output	6S4	6S4	9AC	
V15	Horiz. AFC	6AL5	6AL5	6BT	
V16	Horiz. Mult	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6BQ6GT	6BQ6GT	8AM	
V18	Damper	6AX4GT	6AX4GT	4CG	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5U4G	5U4G	5T	
V21	Picture tube				Replace with same type used

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AMC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	±80	500	18-278	APH3-159		C118			R1529	
B	±20	450		PRS450/20		BR2045				
C	±100	50								
C2	40	300	18-299	PRS450/40		BR4035		TC78	TVA-1611	Note 2
C3A	±40	450	18-277	APH3-159		DI37		FP375	TVL-3764	
B	±100	200		PRS250/30-30				TC68	TVA-1613	
C	60	200								
D	±40	450								
C4	40	300	18-299	PRS450/40		BR4035		TC78	TVA-1611	
C5	4	50	18-292	PRS150/4		BR550		TC30	TVA-1303	
C6	4	50	18-292	PRS150/4		BR550		TC30	TVA-1303	
C7	9					BR550				
C8	470		BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47		
C9	470		BPD-00047	D6-471	K060	812-471	UC-5347	5GA-T47		
C10	100		BPD-0001	D6-101	G042	GP1K-101	UC-531	5GA-T1		
C11	470		BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47		
C12	470		BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47		
C13	650									
C14	650									
C15	3-8				829-10					
C16	800			EF-001	MFT-1000				503C-D1	
C17	3			SINP0	TCZ-3.3	Z007	NP0K-3R3	Z7-5533	5TCCB-V33	
C18	800			EF-001	MFT-1000				503C-D1	
C19	1.5			SIL.5NP0	TCZ-1.5	Z004	NP0K-1R5	Z7-5515	5TCCB-V15	
C20	.5-3				829-3		3125-01-0R5	CT565A		
C21	47			BPD-000047	D6-470	G033	801-470	UC-5447	5GA-Q47	
C22	1000			BPD-001	DD-102	K069	801-001	DC-531	5HK-D1	
C23	800			EF-001	MFT-1000				503C-D1	
C24	47			BPD-000047	D6-470	G033	801-470	UC-5447	5GA-Q47	
C25	.5-3				829-3		3125-01-0R5	CT565A		
C26	10			SI10NP0	TCZ-10	Z018	NP0K-100	Z7-541	5TCC-Q1	
C27	5									
C28	6.8			SI6.8NP0	TCZ-6.8	Z013	NP0K-6R8	Z7-5568	5TCCB-V68	
C29	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C30	800			EF-001	MFT-1000				503C-D1	
C31	800			EF-001	MFT-1000				503C-D1	
C32	120			BPD-00012	D6-121	G044	GP2K-121	UC-5312	5GA-T12	
C33	.022	600	18-197	PD86-022	DF-223	C068S22	817-02	PT622	6TM-S22	Note 1
C34	5000		18-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C35	5000		18-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C36	5000		18-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C37	5000		18-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C38	.2	400	18-188	P488-22		CUB4P22		PT4022	4TM-P22	
C39	5000		18-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C40	5000		18-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C41	5000		18-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C42	5000		18-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C43	5000		18-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C44	10	500	15-223	1468-00001	D6-100	5W5Q1	GP1K-100	MC215	1FM-41	
C45	.05	400	18-189	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C46	220	500	15-230	1468-00025	D6-221	5W5T22	GP2K-221	MC240	1FM-325	
C47	47			SI47	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C48	.22	400	18-188	P488-22		CUB4P22		PT4022	4TM-P22	
C49	2			SI2.7NP0	TCZ-2.2	TZ05	NP0K-2R2		5TCCB-V22	
C50	47			SI47	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C51	120			SI120	D6-121	TP35	GP2K-121	UC-5312	5GA-T12	
C52	5000		18-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C53	5000		18-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C54	220	500	15-230	1468-00025	D6-251	5W5T22	GP2K-221	MC240	1FM-325	
C55	2000		15-228	SI2000	D6-202	TP56	GP2-333-202	UC-523	5HK-D2	
C56	5000		18-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C57	5000		18-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C58	470	500	15-200	1468-0005	D6-501	5W5T47	GP2K-471	MC245	1FM-35	
C59	.02	600	18-191	PD86-02	DF-203	C068S2	817-02	PT612	6TM-S2	
C60	.22	400	18-188	P488-22		CUB4P22		PT4022	4TM-P22	
C61	.002	600	18-198	PD86-002	D6-202	CUB6D2	GP2-333-202	PT622	6TM-D2	
C62	.05	400	18-189	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C63	.05	400	18-189	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C64	.01	600	18-201	PD86-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C65A	.002							PT622		
B	.005		±33-100	±PA-110	±PC-100	±115TM1	±1405-01	PT625	±101C1	
C	.005							PT625		

CAPACITORS (cont)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AMC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C66	.005	500	18-190	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C67	.2	600	18-212	684-2		CUB6P25		PT602	6TM-P2	
C68	.05	600	18-193	P688-05	DF-503	CUB6S5		PT615	6TM-S5	
C69	.1	600	18-208	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C70	.0047	600	18-211	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C71	1000		15-220	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C72	1000		15-220	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C73	.01	600	18-201	P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-P1	
C74	.0047	600	18-211	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C75	.047	600	18-193	P688-047	DF-503	CUB6S5		PT615	6TM-S5	
C76	3900	500	15-229	1644-004		1DR5D39		MCB463	MS-34	
C77	330	500	15-226	1469-00035		5R5T33				
C78	.2	600	18-212	684-2		CUB6P25		PT602	6TM-P2	
C79	390	500	15-231	1469-0004		5R5T39		MCB343	MS-34	
C80	390	500	15-231	1469-0004		5R5T39		MCB343	MS-34	
C81	.1	300	18-208	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C82	.05	1000	18-218	P1088-05		CUB10S5		PT615	MS-55	
C83	.033	1000	18-194	P1088-033		PM10S33				Note 3
C84	.2	500	18-212	684-2		CUB6P25		PT602	6TM-P2	
C85	50	2000							30GA-Q5	

Note 1. Used only with cascode type tuner.
Note 2. Used only in models with UHF tuner.
Note 3. Some models use .03MFD in this application.
* Items C65A, C65B, C65C, R62A, R62B, R62C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AMC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1000Ω	½	P24-190A	* QJ-326			UF13R	Contrast (Panel)
B	500KΩ	½					UR56A	Volume (Rear)
C	Switch						US-26	Attach to RIB
R2	2250Ω	4	P25-19		RTV-319		TVF143	Focus wire wound Note 2
R3A	50KΩ	½	25-18	Q11-123	A47-50K-S	AB-31	U-35	Brightness Note 1
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R3A
R4A	50KΩ	½	25-18	Q11-123	A47-50K-S	AB-31	U-35	Horiz. Hold Note 1
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R4A
R5A	2 Meg	½	25-20	Q11-139	A47-2 Meg-S	AB-75	U-56	Vert. Hold Note 3
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R5A
R6A	2 Meg	½	25-15	Q11-139	A47-2 Meg-S	AB-75	SU-56	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	2500Ω	½	25-13	Q11-112	A47-3000-S	AB-7	U-8	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A

* CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B17-108 & R1-224 (Panel)
B13-133 & R2-305 (Rear) & SWITCH 78-1.

Note 1. Some models may use an alternate control on rear of chassis Part No. 25-10.
Note 2. Some models may use an alternate control on rear of chassis Part No. 25-14.
Note 3. Some models may use an alternate control on rear of chassis Part No. 25-15.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AMC PART No.	IRC PART No.	NOTES
R8	5600Ω	1		BTA-5600	
R9	8200Ω	2		BTB-8200	
R10	27Ω	1		BTS-27	
R11	1 Meg	½		BTS-1 Meg	
R12	100Ω	½		BTS-100	
R13	1000Ω	½		BTS-1000	
R14	15KΩ	½		BTS-15K	
R15	47KΩ	½		BTS-47K	
R16	100KΩ	½		BTS-100K	
R17	160KΩ	½		BTS-160K	
R18	100KΩ	½		BTS-100K	
R19	1500Ω	½		BTS-1500	
R20	10KΩ	½		BTS-10K	
R21	220KΩ	½		BTS-220K	
R22	10KΩ	½		BTS-10K	
R23	15KΩ	½		BTS-15K	
R24	4700Ω	½	60-759	BTS-4700	
R25	680Ω	½	60-683	BTS-680	
R26	56Ω	½	60-806	BTS-56	
R27	6800Ω	½	60-788	BTS-6800	
R28	100Ω	½	60-684	BTS-100	
R29	1 Meg	½	60-688	BTS-1 Meg	
R30	56Ω	½	60-806	BTS-56	
R31	100Ω	½	60-684	BTS-100	
R32	6800Ω	½	60-788	BTS-6800	
R33	82Ω	½	60-776	BTS-82	
R34	5600Ω	½	60-874	BTS-5600	
R35	470KΩ	½	60-681	BTS-470K	
R36	82Ω	½	60-776	BTS-82	
R37	1000Ω	½	60-873	BTS-1000	
R38	6800Ω	2	60-808	BTB-6800	
R39	10KΩ	½	60-780	BTS-10K	
R40	3300Ω	2	60-816	BTB-3300	
R41	100KΩ	½	60-801	BTS-100K	
R42	1000KΩ	½	60-801	BTS-1000K	
R43	22KΩ	2	60-810	BTB-22K	
R44	7500Ω	10	60-876	1 3/4A-7500	Note 1
R45	5100Ω	2	60-877	BTB-5100	Note 1
R46	150Ω	½	60-767	BTS-150	
R47	47KΩ	½	60-730	BTS-47K	
R48	27KΩ	½	60-784	BTS-27K	
R49	4.7 Meg	½	60-779	BTS-4.7Meg	
R50	270KΩ	½	60-747	BTS-270K	
R51	100KΩ	½	60-801	BTS-100K	
R52	180KΩ 5%	½	60-788	BTS-180K 5%	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AMC PART No.	IRC PART No.	NOTES
R53	330KΩ 5%	½	60-787	BTS-330K 5%	
R54	800Ω	10	60-800	1 3/4A-800	
R55	1.2 Meg	½	60-782	BTS-1.2 Meg	
R56	22KΩ	½	60-744	BTS-22K	
R57	680KΩ	½	60-807	BTS-680K	
R58	22KΩ	½	60-744	BTS-22K	
R59	2200Ω	½	60-714	BTS-2200	
R60	15KΩ	½	60-786	BTA-15K	
R61	2200Ω	½	60-714	BTS-2200	
R62A	22KΩ			BTS-22K	
B	8200Ω		±33-100	BTS-8200	
C	8300Ω			BTS-8200	
R63	1.5 Meg	½	60-890	BTS-1.5 Meg	
R64	10KΩ	½	60-780	BTS-10K	
R65	22KΩ	½	60-744	BTS-22K	
R66	2.2 Meg	½	60-890	BTS-2.2Meg	
R67	56KΩ	½	60-802	BTS-56K	
R68	470KΩ	½	60-681	BTS-470K	
R69	8200Ω	½	60-778	BTS-8200	
R70	2.2Meg	½	60-726	BTS-2.2Meg	
R71	680Ω	½	60-683	BTS-680	
R72	560Ω	½		BTS-560	
R73	560Ω	½		BTS-560	
R74	100KΩ	½	60-801	BTS-100K	
R75	100KΩ	½	60-801	BTS-100K	
R76	470KΩ	½	60-681	BTS-470K	
R77	4.7Meg	½	60-779	BTS-4.7Meg	
R78	15KΩ	½	60-785	BTA-15K	
R79	1500Ω	½	60-723	BTS-1500	
R80	5600Ω	½	60-874	BTS-5600	
R81	100KΩ	½	60-801	BTS-100K	
R82	270KΩ	½	60-747	BTS-270K	
R83	120KΩ	½		BTS-120K	
R84	4700Ω	½	60-675	BTS-4700	
R85	470KΩ	½	60-681	BTS-470K	
R86	56Ω	½	60-806	BTS-56	
R87	27Ω	2	60-878		
R88	120Ω	2	60-879		
R89	120Ω	2	60-879		
R90	25KΩ	10	60-804	1 3/4A-25K	
R91	7500Ω	10	60-876	1 3/4A-7500	
R92	3.3Ω	½	60-691		
R93	470KΩ	2	60-692	BTB-470K	
R94	330Ω	2	60-682	BTB-330	
R95	7500Ω	10	60-876	1 3/4A-7500	Note 2

Note 1. Used only in sets with cascode type tuner.
Note 2. Used only in sets with UHF tuner.
* Items R62A, R62B, R62C, C65A, C65B, C65C are combined in one unit.

TRANSFORMER (POWER)

ITEM No	RATING: PRI	RATING: SEC 1	RATING: SEC 2	REPLACEMENT DATA: AMC PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ 1.74A	760VCT @ .180A	5VAC @ 3A	80-286-1	P-8169 ①	P-3087 ② ③	R-33BC		P8731 ①	26H19 ② ④
	SEC 3	SEC 4	SEC 5							
	6.3VAC @ 1.45A	6.3VAC @ 6.7A								

① Parallel and phase 6.3V ④ 5A and 7A windings for Sec. # 4.
② Tape low taps on high voltage secondary.
③ Tape one 5V winding.
④ Tape 5V ④ 2A winding.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: AMC PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T2	Vert. Osc. Trans.	80-257	A-8125	A-3008	A-97X	2097①	B6702	24A87①
T3	Horiz.Output Trans.	80-265-2	A-8136 *	HVO-10 * ②	D-15 * ②	221T1 * & 214R1 ②	F1410 ②	
T4	Vert.Output Trans.	80-261	A-8123	A-3037	A-102X	222T1	Z1804	26S52
T5A	Yoke-Horiz. (13MH)	10-601	DY-2A	MDF-70	Y-21-1	209D1 ⑤	DF602	Y-6
B	Yoke-Vert.(40.5MH)							
T6	Focus Coil	10-576	FC-11	MF-2	D-470		EM701	FC-3
T7	Horiz. Linearity (4.5-28MH)	10-561	WC-5 ④ ⑤	MWC-1 ④ ⑤	WC-11 ④ ⑤	215R1	RF800 ④ ⑤	WC-20 ④ ⑤
T8	Width (4.5-28MH)	10-561	WC-5 ④ ⑤	MWC-1 ④ ⑤	WC-11 ④ ⑤	215R1	RF800 ④ ⑤	WC-20 ④ ⑤

① Drill one new mounting hole.
② Drill new mounting holes.
③ Use original yoke network.
④ Enlarge mounting hole.
⑤ Connect to coded red and blue terminals.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Stancor Replacement Connections	Merit Replacement Connections	Triad Replacement Connections	RCA Replacement Connections	Halldorson Replacement Connections	Thordarson Replacement Connections
3	3	3	1B3 Rect Plate Lead	1B3 Rect Plate Lead	1B3 Rect Plate Lead	
2	2	2	7	3	9	
1	1	1	8	1	4	
4	4	4	4	10	8	
5	5	5	1	8	6	
6	NC	NC	NC	NC	NC	
7	7	6	T	4	7	
9	9	7	6	(Term. "C") 214R1	1	
8	8	9	2	(Term. "D") 214R1	11	
Connect Width Coil Across	8 & 9	7 & 9	6 & 2	214R1 (Term "A" & "B")	1 & 11	
Special Notes →		⑥	⑤	⑦	⑥	

⑤ If the picture is out of phase, reverse AFC winding.
⑥ Remove original width coil and connect primary of 214R1 across terminals 4 &5. Connect secondary to AFC. If picture is out of phase, reverse primary or secondary of 214R1.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI	IMPEDANCE: SEC	REPLACEMENT DATA: AMC PART No.	Stancor PART No	Merit PART No	Triad PART No	Halldorson PART No	Thordarson PART No	NOTES
T9	5.2KΩ	3 to 4Ω	80-253	A-3877 ①	A-3019	S-5Z	Z1002	26S49	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: AMC PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1A	5"	PM	3 to 4Ω	79-388	5J4	5A1	
B	8"	PM	3 to 4Ω	79-390	8J9	8A21	
C	10"	PM	3 to 4Ω	79-389	10J11	10A31	

COILS (RF-IF)

ITEM No.	USE	DC RES.: PRI	DC RES.: SEC	REPLACEMENT DATA: AMC PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	FIL. Choke	0Ω						
L2	FIL. Choke	0Ω						
L3	IF Input Coil Primary	0Ω						
L4	IF Input Coil Secondary	0Ω						
L5	IF Input Coil Mutual	0Ω						
L6	RF Choke	.2Ω						
L7	Neutr. Coil	.2Ω						
L8	UHF IF Output Trans.	0Ω	0Ω					

AMC MODELS 20CD2B, 20C2B, 20T2B, 21CD2A, 21C2A

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AMC PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L9	VHF Ant. Coils	0ΩCT	0Ω					Includes capacitors
L10	Fil. Choke	0Ω						
L11	Neutr. Coil	0Ω						
L12	VHF RF, Mixer grid & Osc. Coils	0Ω						
L13	Fil. Choke	0Ω						
L14	RF Choke	0Ω						
L15	1st Video IF	1Ω						
L16	RF Choke	1.3Ω						
L17	Fil. Choke	0Ω						
L18	2nd Video IF	.3Ω	.3Ω	10-573	17-1062	TV-116	6250	
L19	3rd Video IF	.3Ω	.3Ω	10-573	17-1063	TV-116	6249	
L20	4th Video IF	.3Ω	.3Ω	10-573	17-1063	TV-116	6249	
L21	Series Peaking Coil	2.6Ω		10-567	19-3036	TV-180	6176	36 Micorhenries
L22	Shunt Peaking Coil	10Ω		10-558	19-3300		4648	375 Microhenries
L23	Series Peaking Coil	7.5Ω		10-568	19-4200	TV-185 †	4646 †	225 Microhenries; wound on 10KΩ resistor
L24	4.5MC Trap	2.1Ω		10-562	20-1004	TV-151	1470	
L25	Shunt Peaking Coil	12Ω		10-569	19-3500	TV-188	6174	510 Microhenries
L26	Sound IF	2.1Ω		10-556	17-3400	TV-151	1469	
L27	Ratio Det.	6Ω	2.3Ω	10-553 *	17-3497	TV-115	6205	Tertiary winding=2.9Ω
L28	Horiz. Osc.	50Ω		10-555	19-1576	TV-163	6210	

† Parallel with 10KΩ resistor.
* Alternate Part # 10-552.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA AMC PART No. FUSE	AMC PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	5A	43-12		312005. (3AG -5A)	341001	MTH5	HKP
M2	3AG P/T	1/4A 250V	43-13		318.250 (3AG-P/T 1/4A)		GJV 1/4	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA AMC PART No.	SYLVANIA PART No.	FEDERAL PART No.	NOTES
M3	1N82		1N82 or A		UHF mixer
M4	1N64	48-46	1N132	1N64A	Video detector

MISCELLANEOUS

ITEM No.	PART NAME	AMC PART No.	NOTES
M5	Dial Light		#47
M6	Tuner	CV-101	UHF Converter
M7A	Tuner	TU-1003	VHF (Cascode - 13th. position for UHF)
B	Tuner	TU-1000	VHF (Standard)
M8	Switch		UHF-VHF Changeover
M9	Switch	46-101	TV-Phono
M10	Ion Trap	83-670	
M11	Correction Magnet		
B2	Trimmer Cap.	20-145	Horiz. Drive
	Knob	52-107	Channel Selector
	Knob	52-108	Fine tuning
	Knob	52-109	Volume
	Knob	52-110	Contrast
	Knob	52-111	Trap door
	Safety Glass	40-205	Model 20T2B
	Safety Glass	40-207	Model 20C2B & 20CD2B
	Safety Glass	40-208	Model 21CD2A & 21C2A

TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3924 [illegible] ST.
DENVER, COLORADO

POWER

DEAD SET

If filaments fail to light, check fuse M1, AC interlock assembly, switch on volume control and T1. If filaments light, substitute V20. Check B+ filter and decoupling network components for failure or change of value.

SMALL AND/OR DIM PICTURE

Substitute V20. Check B+ filter and decoupling network components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse M2. Check by substitution V16, V17, V18 and V19. Check waveform W13.

If Satisfactory	If Unsatisfactory
Check T3, T5A, R92, R93, R90, C81, C84 and other associated components.	Check C80, C77, R82, R83, R86, and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V16, V17, V18, V19 and V20. Check picture tube. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V16, V17, V18, V19 and V20. Check R92, R93, R90, C81, C84, T3, T5A, picture tube and other associated components.

GENERAL

RASTER SOUND NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER PICTURE NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER NO SOUND NO PICTURE

Check by substitution V3, V4, V5, V6, V7 and V8. Check tuner, video IF and video detector components. In case of UHF check V1 and V2. Check UHF tuner components.

NO RASTER NO SOUND

Follow procedure outlined under "Dead Set".

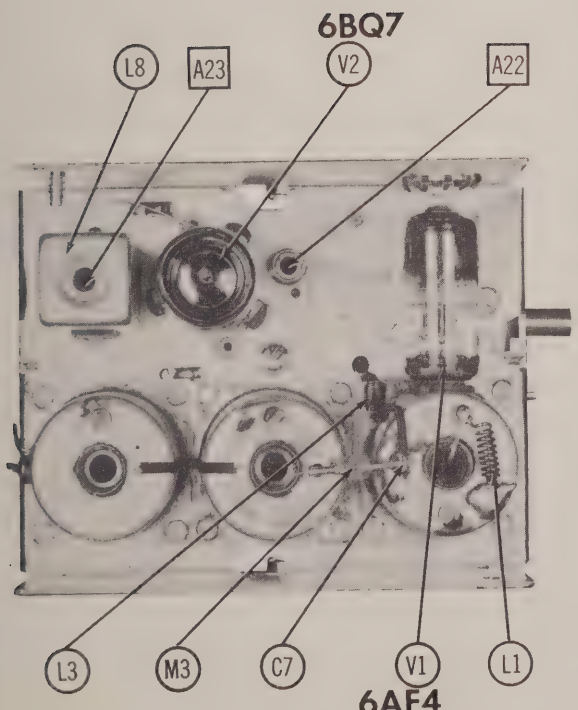
KEYSTONE EFFECT

Check T5, R72, R73, and C85.

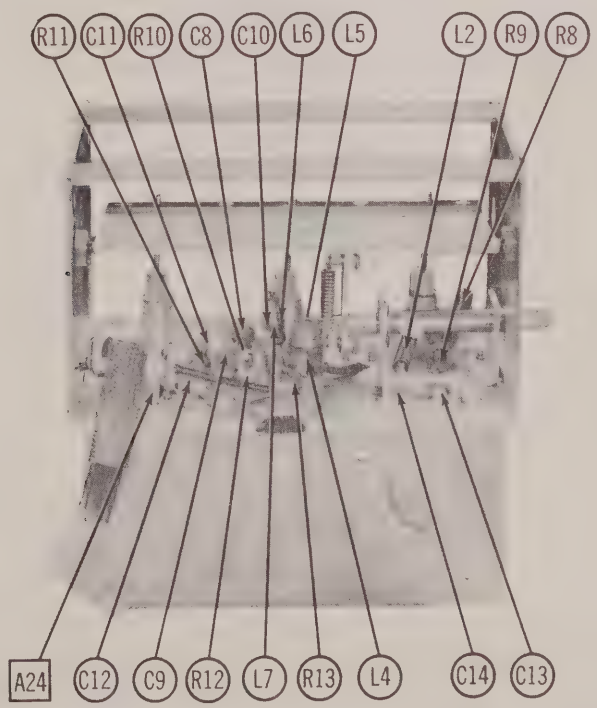
INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



UHF TUNER TOP VIEW



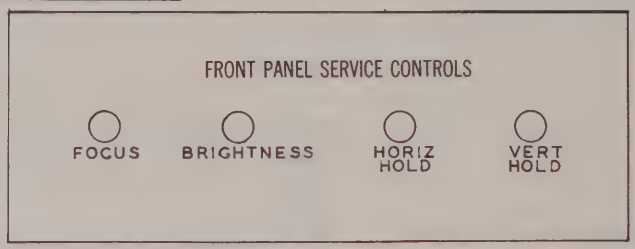
UHF TUNER BOTTOM VIEW

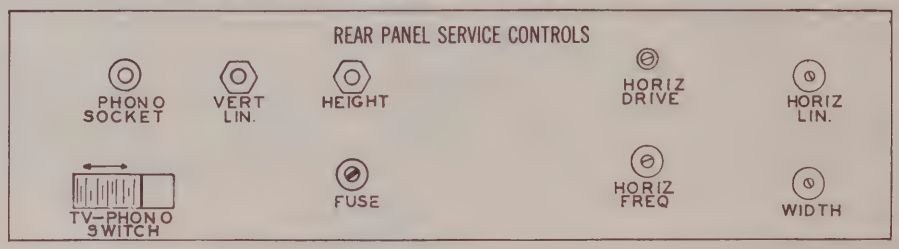
SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator Circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, thru the small hole in the cabinet to the right of the channel selector shaft.

SERVICE ADJUSTMENT LOCATION





HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug (L28) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

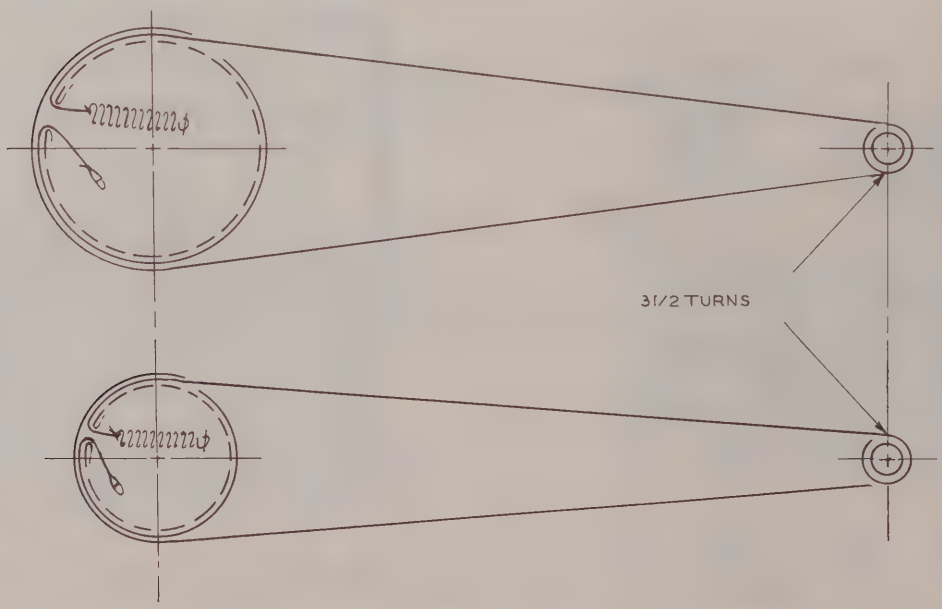
To eliminate sound IF detector buzz, adjust the ratio detector secondary (L27) located on top of chassis. (See tube placement chart).

FUSES

Two fuses are used. One for horizontal sweep circuit protection and one for LV power supply protection (For location, see tube placement chart).

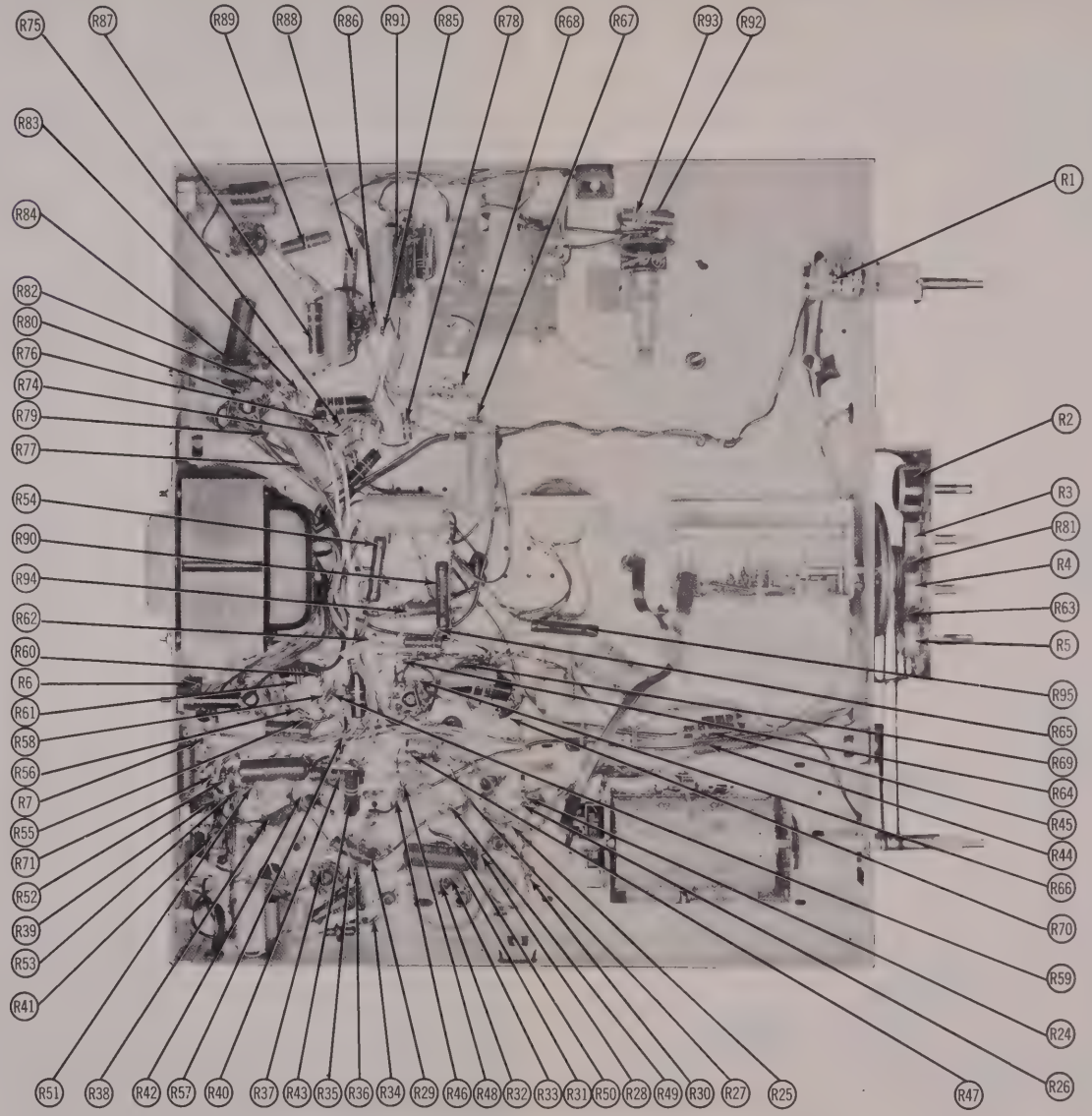
CENTERING

Centering is accomplished mechanically by positioning the focus coil. Adjust the three speed nuts located on the focus coil bracket until picture is properly centered.



UHF DRIVE CORD STRINGING

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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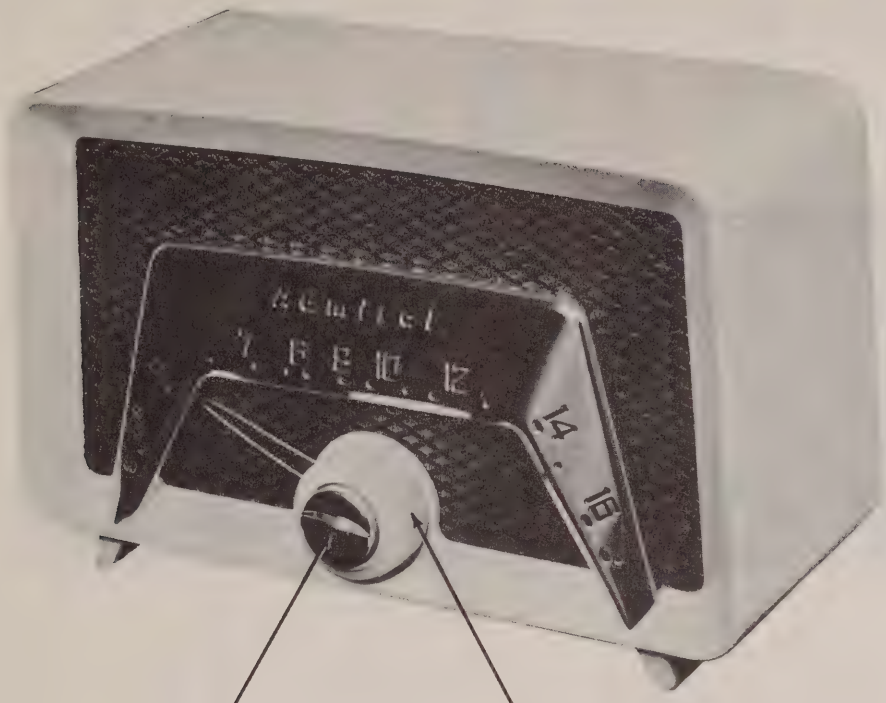
ADMIRAL
CHASSIS 6C2, 6C2A



MODEL 6C23A

TRADE NAME	Admiral Models 6C22, 6C23 (Ch. 6C2), 6C22A, 6C23A (Ch. 6C2A)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Six)	Types 12SK7 RF Amp., 12SA7 Conv., 12SK7 IF Amp., 12SQ7 Det.-AVC-AF Amp., 35L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC — RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	250MMF	High side to pin 8 (grid) of 12SA7 (V2). Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output
2.	"	High side to antenna stator lug on tuning gang. Low side to B-.	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal.	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

ADMIRAL
MODEL 6C22, (Ch. 6C2)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	12SK7	12SK7	8N	
V2	Converter	12SA7	12SA7	8R	
V3	IF Amplifier	12SK7	12SK7	8N	
V4	Det-AVC-AF Amp.	12SQ7	12SQ7	8Q	
V5	Audio Output	35L6GT	35L6GT	7S	
V6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	70	150	67A17	PRS150/70-30		BBRD8415		TCD498	TVA-2460	Red
B	30	150								Yellow
C2	.1	200	64B1-30	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C3	47		65C6-79	SI47N750	TCZ-47	TN14	N750K-470	NT-5447	5TCU-Q47	
C4	.05	400	64B1-22	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C5A	100		♦63A3-1	♦PA-97-1	♦PC-50	♦111TM1	♦1403-01	UC-531	♦D-1	
B	100							UC-531		
C6	.01	400	64B1-25	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C7	.1	200	64B1-30	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C8A	5000									
B	250		■63A5-4	■PA-112-1	■PC-70	■112TM1	■1406-01		■T-3	
C										
C9	.02	400	64B1-24	P488-02		CUB4S2		PT412	4TM-S2	
C10	.047	400	65A13-5	489ZX-047	DF-503	PJ4S47		PT4147	4TM-S47	
C11	.18	200	64A2-2							

♦ Items C5A, C5B, R4 are combined in one unit.
■ Items C8A, C8B, C8C, R6A, R6B are combined in one unit.
When items are replaced separately, items C8B and C8C should total 250MMF.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	75B-56	Q13-137	A47-1Meg-Z	AB-70	U-53	Volume-See Note
B	Shaft		Not Req.	C3	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R1A

Note: Chassis 6C2 uses volume control Part No. 75B1-48.

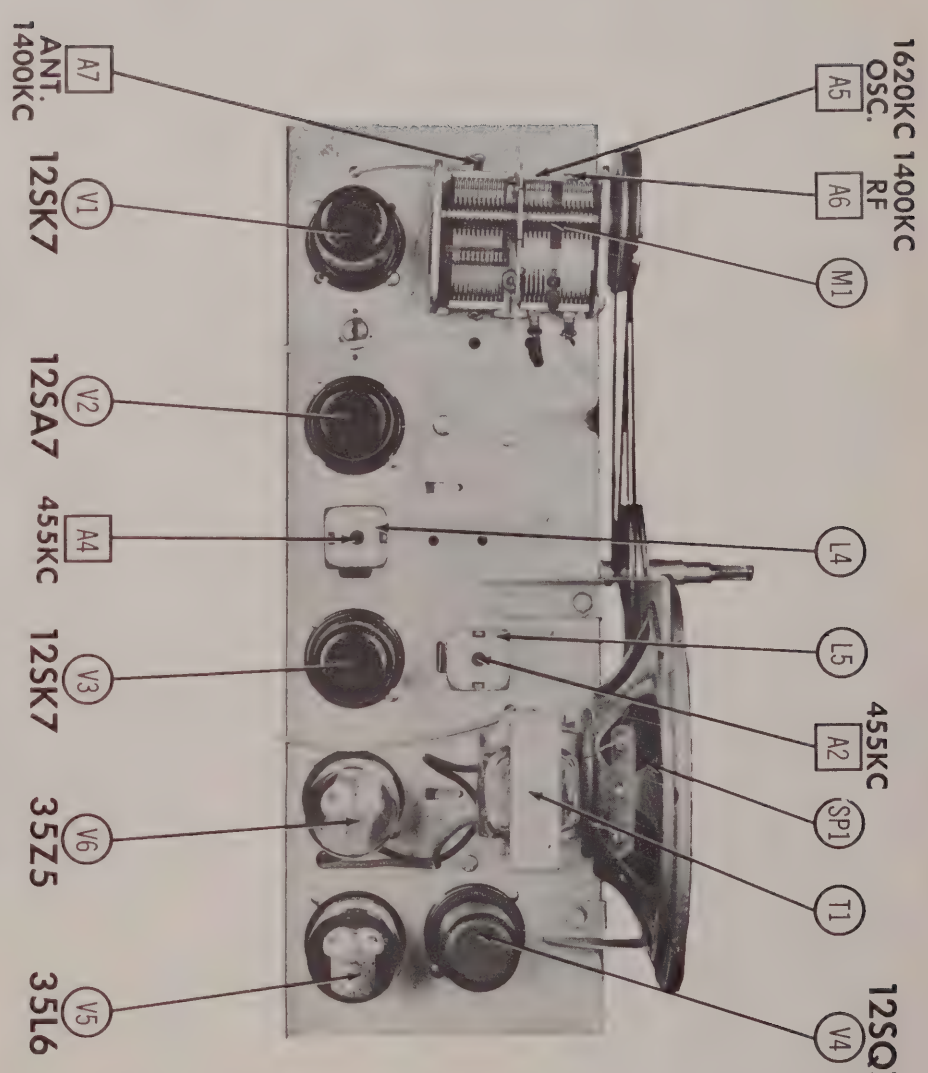
RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	NOTES
R2	22KΩ	½	60B8-223	BTS-22K	
R3	1 Meg	½	60B8-105	BTS-1 Meg	
R4	47KΩ	½	♦ 63A3-1	BTS-47K	
R5	4. 7Meg	½	60B8-475	BTS-4. 7Meg	
R6A	500KΩ	½	■63A5-4		
B	500KΩ	½			

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	NOTES
R7	150Ω	½	60B8-151	BTS-150	
R8	1000Ω	1	60B28-2	BTA-1000	
R9	33Ω	1	60B28-3		
R10	150KΩ	½	60B8-154	BTS-150K	
R11	47KΩ	½		BTS-47K	

♦ Items R4, C5A, C5B are combined in one unit.
■ Items R6A, R6B, C8A, C8B, C8C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ADMIRAL PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.3KΩ	3.9Ω	Part of speaker	A-3876 ①	A-2928 ①	S-2X ①	Z1001 ①	24S50 ①	① Bend mounting tabs down. File out slots. Mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.9Ω	N-9962	ST-105 Mod. P5-X	5A1	

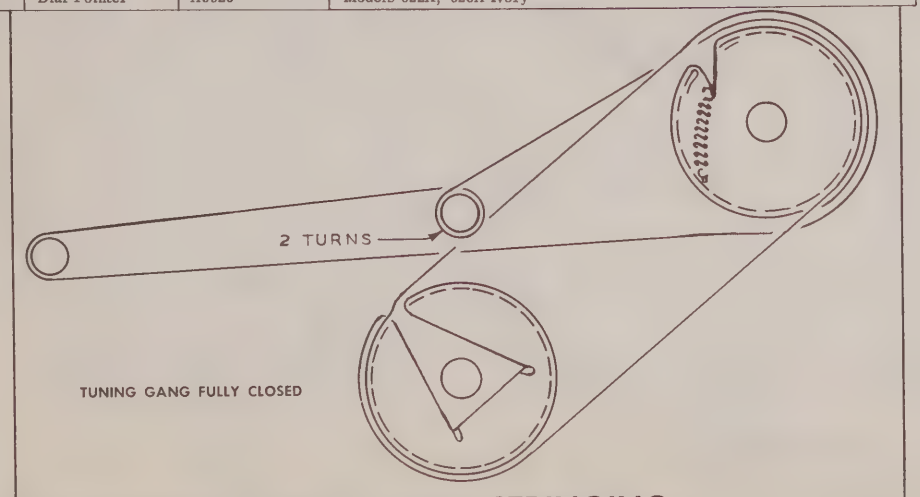
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ADMIRAL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.2Ω		69C148-1				Includes cabinet back
L2	RF Coil	2Ω	10Ω	69A115-1				Sec. tapped ⓐ 5.5Ω
L3	Osc. Coil	7Ω		69A52-2			70-Osc.	* Tapped ⓐ .9Ω
L4	Input IF	16Ω	17Ω	72B28-7	16-6758	BC-352	12-C1	
L5	Output IF	16Ω	17Ω	72B28-7	16-6758	BC-353	12-C2	

* Use secondary winding only.

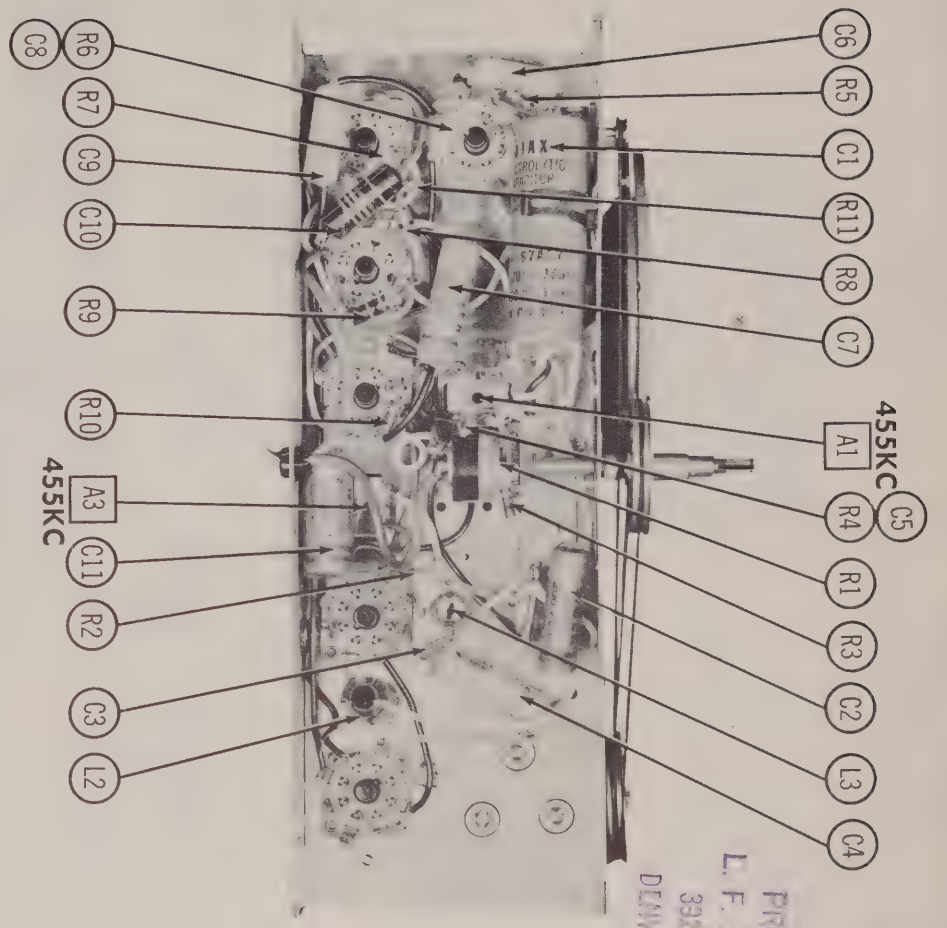
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M1	Tuning cap.	68B50-1	35-362, 10-205MMF, 13-100MMF
	Cabinet	34D50-2	Plastic-mahogany
	Cabinet	34D50-3	Plastic-Ivory
	Knob	33A80-2	On/Off volume
	Knob	33A79-2	Tuning-mahogany
	Knob	33A79-3	Tuning-Ivory
	Dial Pointer	25A53-2	Models 6C22, 6C23 Mahogany
	Dial Pointer	25A53-3	Models 6C22, 6C23 Ivory
	Dial Pointer	A3919	Models 622A, 623A Mahogany
	Dial Pointer	A3920	Models 622A, 623A Ivory



DRIVE CORD STRINGING

CHASSIS—BOTTOM VIEW



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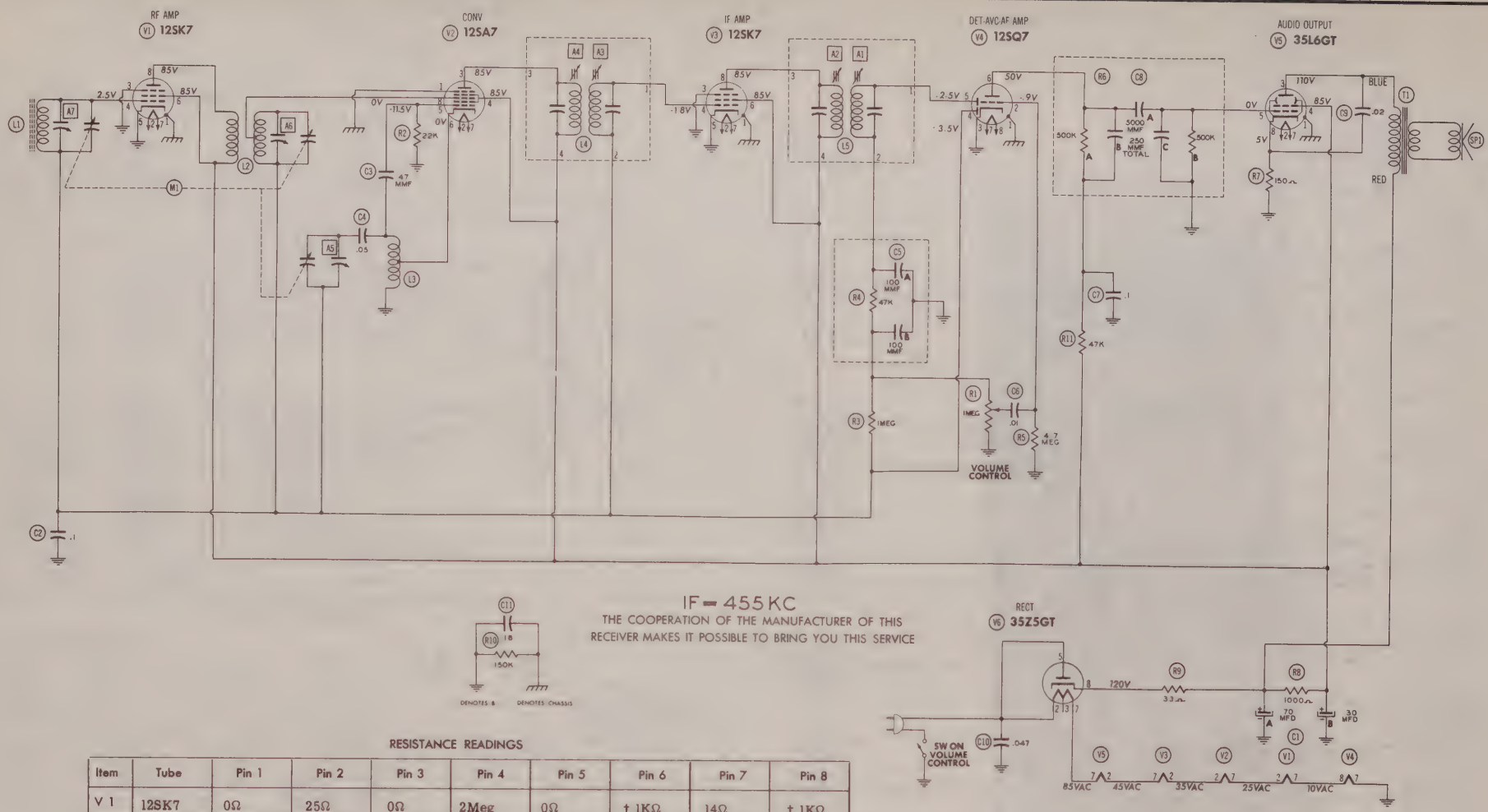
ADMIRAL
MODEL 6C22, (Ch. 6C2)



IF = 455 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SK7	0Ω	25Ω	0Ω	2Meg	0Ω	† 1KΩ	14Ω	† 1KΩ
V 2	12SA7	0Ω	38Ω	† 1KΩ	†1KΩ	22KΩ	. 9Ω	25Ω	2 Meg
V 3	12SK7	0Ω	38Ω	0Ω	2 Meg	0Ω	† 1KΩ	50Ω	† 1KΩ
V 4	12SQ7	0Ω	4. 7Meg	0Ω	2 Meg	1 Meg	†-548KΩ	0Ω	14Ω
V 5	35L6GT	0Ω	50Ω	† 200	† 1KΩ	500KΩ	0Ω	85Ω	150Ω
V 6	35Z5GT	INF.	120Ω	115Ω	† 1KΩ	120Ω	† 33Ω	85Ω	30KΩ

† MEASURED FROM PIN 8 OF V6.

1 DC voltage measurements taken with vacuum tube voltmeter.
2 AC voltages measured at 1000 ohms per volt
3 Socket connections are shown as bottom views
4 Measured values are from socket pin to common negative.
5 Line voltage maintained at 117 volts for voltage readings
6 Normal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings
7 Volume control at maximum, no signal applied for voltage measurements

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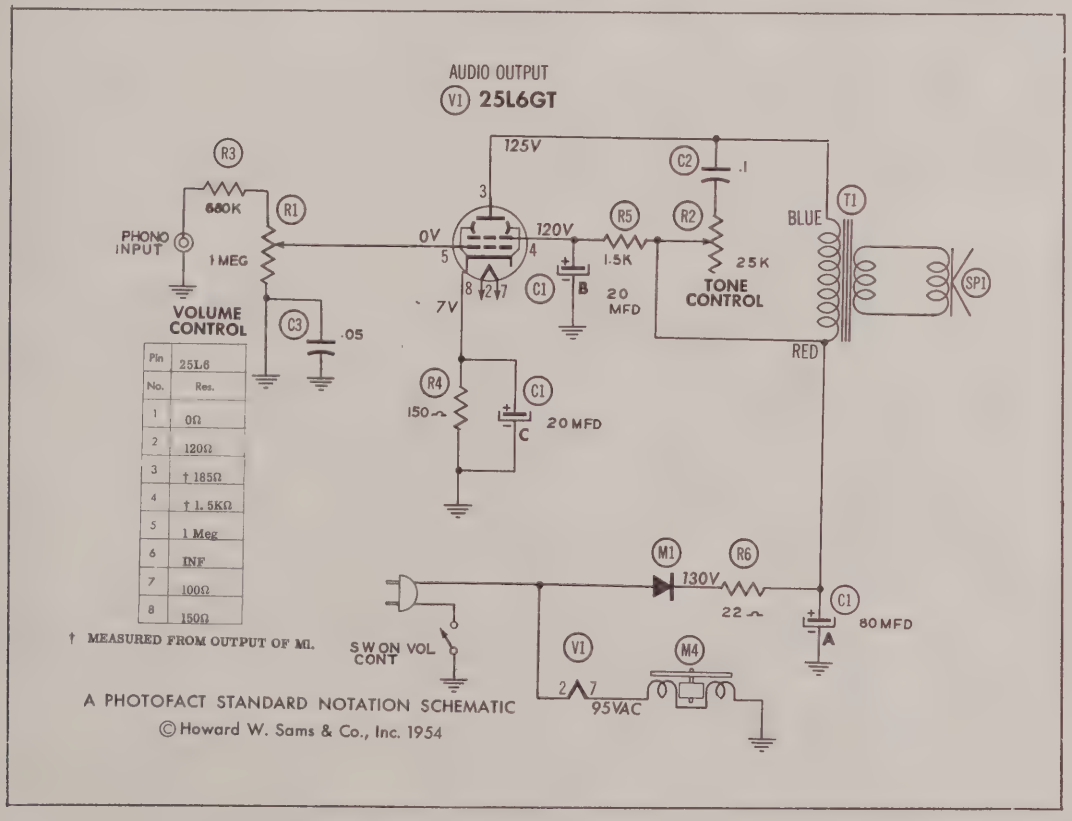
AIRLINE MODELS 25GHM-940B, 25GHM-941B, C, 35GHM-941C

TRADE NAME	Airline Models 25GHM-940B, 25GHM-941B, C, 35GHM-941C
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Manual Record Player
TUBES (One)	Type 25L6GT Audio Amplifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .2 Amp. @ 117 Volts AC



Pin No.	25L6 Res.
1	0Ω
2	120Ω
3	† 185Ω
4	† 1.5KΩ
5	1 Meg
6	INF
7	100Ω
8	150Ω

† MEASURED FROM OUTPUT OF M1.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Audio Output	25L6GT	25L6GT	7S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■80	150	33X109	AFH3-82		C061			R1506	
B	▲20	150								
C	20	25								
C2	.1	200	D-104	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C3	.05	200	D-503	489ZX-05	DF-503	CUB2S5		PT415	2TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½		Q13-137	A47-1Meg-Z	BSK-70-S	U-53	Volume
B	Shaft			Not Req.	KSS03	Not Req.	Not Req.	Attach to R1A
C	Switch			76-1	SWE-12	Not Req.	US-26	Attach to R1A
R2A	25KΩ	½		Q13-120		AB-29	U-29	Tone
B	Shaft			Not Req.		AK-4	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R3	680KΩ	½	A-60684	BTS-680K	
R4	150Ω	½	A-50151	BTS-150	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R5	1500Ω	1	B-60152	BTA-1500	
R6	22Ω	½	A-60220	BTS-22	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: AIRLINE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.8KΩ	3.5Ω	31X103	A-3332	A-3025	S-1X ①	Z1101	TS-24S50 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: AIRLINE PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3.5Ω	12X101	4J4	4A07	

SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: AIRLINE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	NOTES
M1	.058A		1002A	RS65	6S65	65	8J1	

PHONO CARTRIDGE

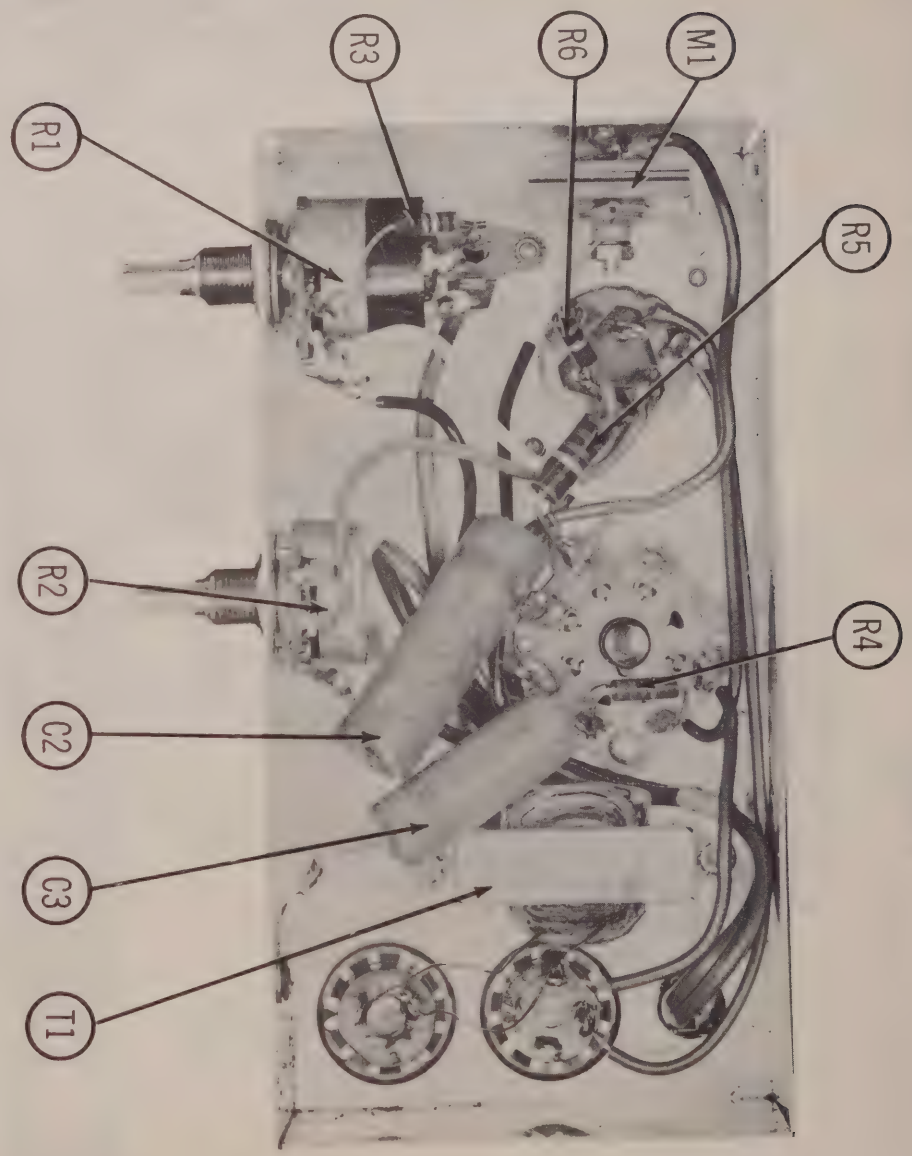
ITEM No.	REPLACEMENT DATA: AIRLINE PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	SHURE PART No.: CARTRIDGE	SHURE PART No.: NEEDLE	ELECTRO-VOICE PART No.: CARTRIDGE	ELECTRO-VOICE PART No.: NEEDLE	REMARKS
M2	60-35	15L3-AG * P-29	"R"			60		* Complete tone arm and catridge assembly.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: AIRLINE PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M3	61H34	A-702	* B-429	*W-25AGA	* Metal tip

CHASSIS—BOTTOM VIEW



MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	Motor	32X107	3 Speed - 90 V.
	Knob	10X130	Volume
	Knob	10X131	Tone

CORONADO MODELS
45TV13-43-9038A, 45TV13-43-9081A

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DENVER, COLORADO

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MODEL 45TV13-43-9081A

CORONADO MODELS
45TV13-43-9038A, 45TV13-43-9081A

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CORONADO MODELS 45TV13-43-9038A, 45TV13-43-9081A

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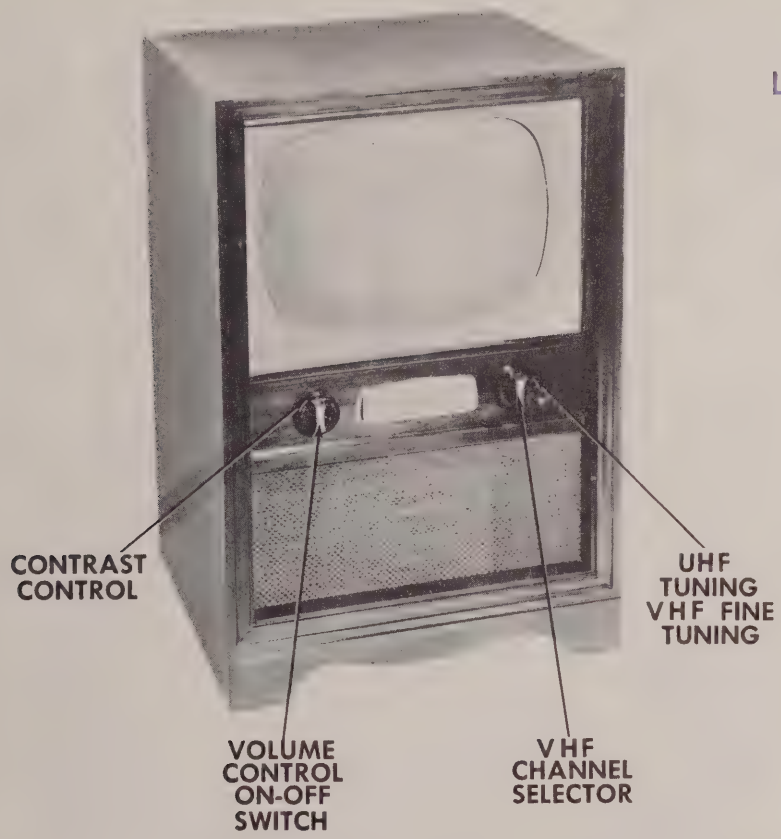

CORONADO MODEL 45TV13-43-9081A

TRADE NAME	Coronado Models 45TV13-43-9038A, 45TV13-43-9081A
SUPPLIER	Gamble-Skogmo, Inc., 15 N. 8th St., Minneapolis, Minn.
TYPE SET	Television Receiver
TUBES	Twenty

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.75 Amp. @ 117 Volts AC
TUNING RANGE– Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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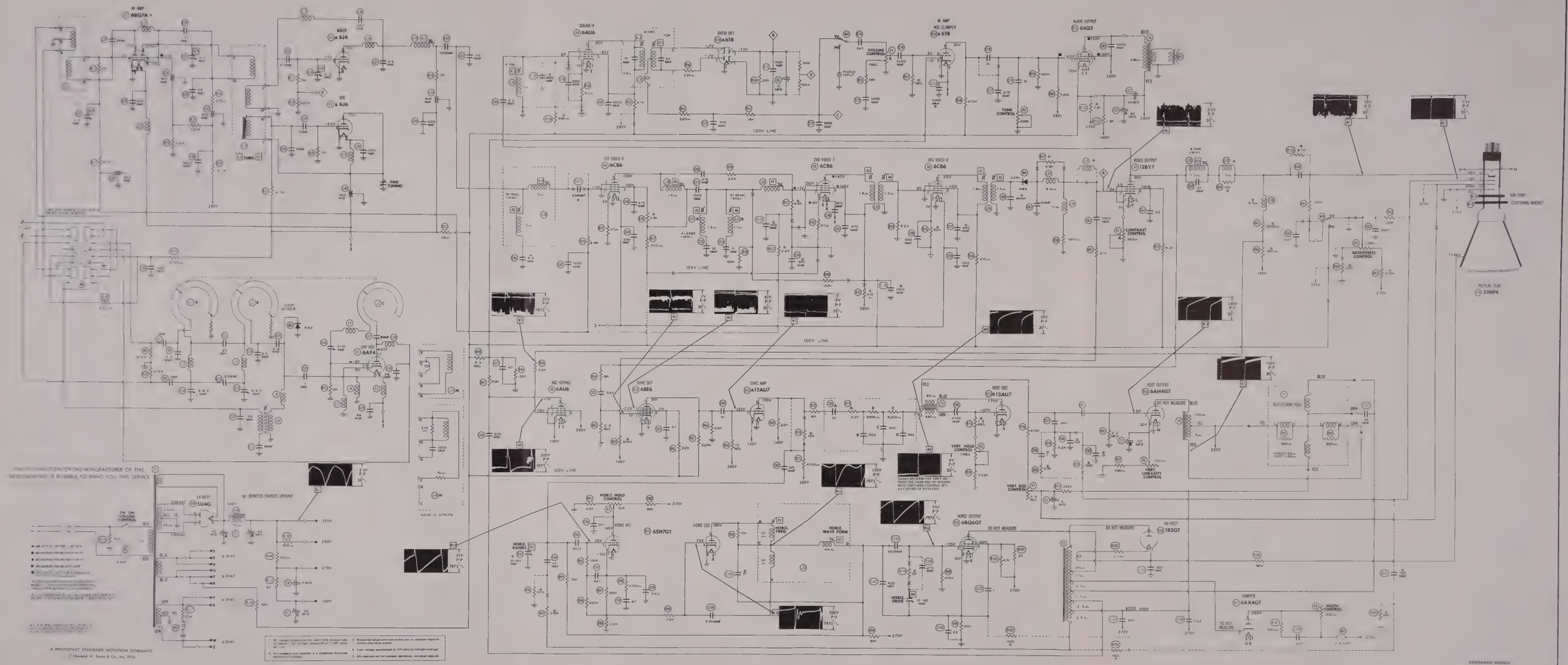
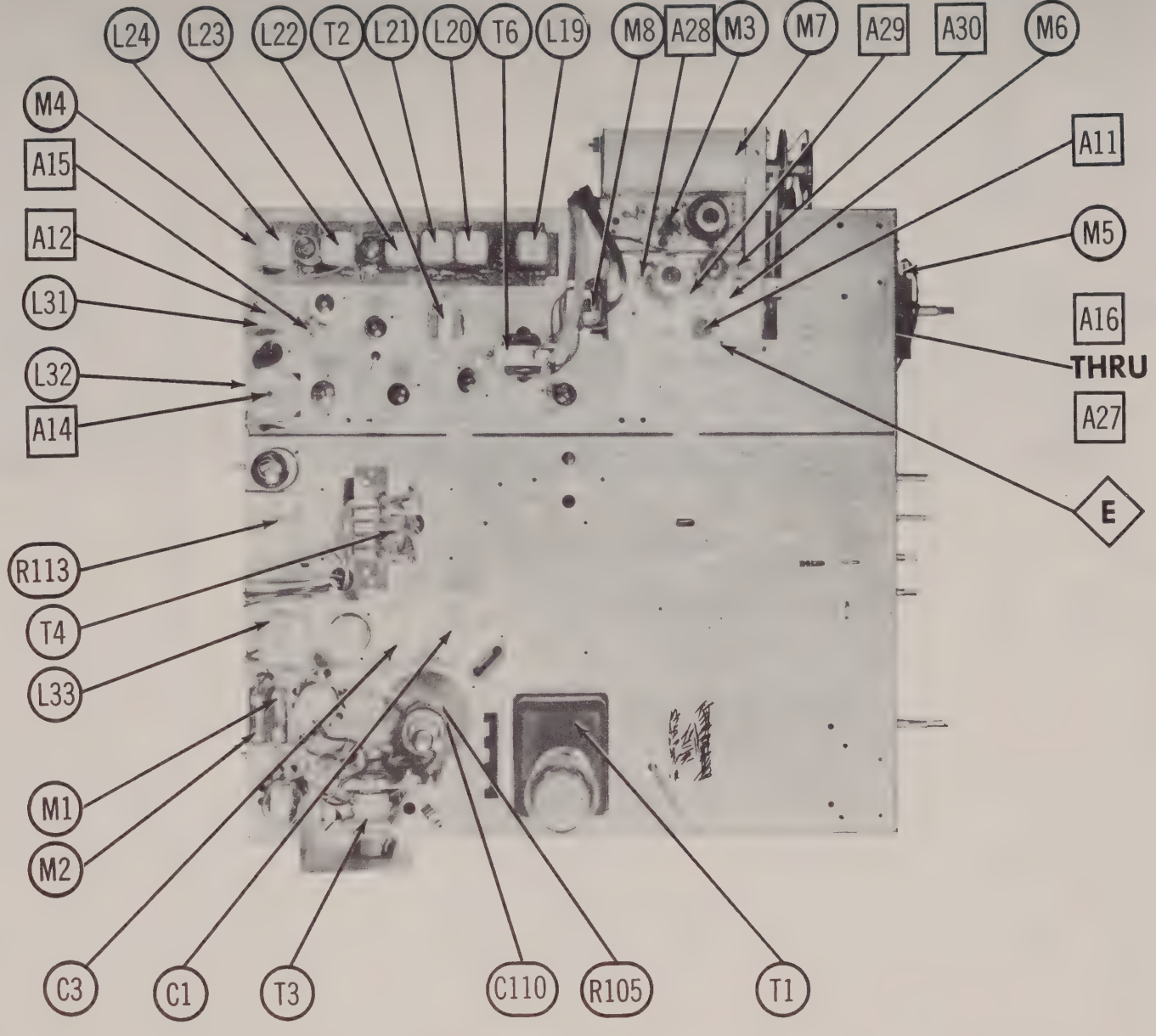
CORONADO MODELS
45TV13-43-9038A, 45TV13-43-9081A



CORONADO MODELS
45TV13-43-9038A, 45TV13-43-9081A



CHASSIS TOP VIEW

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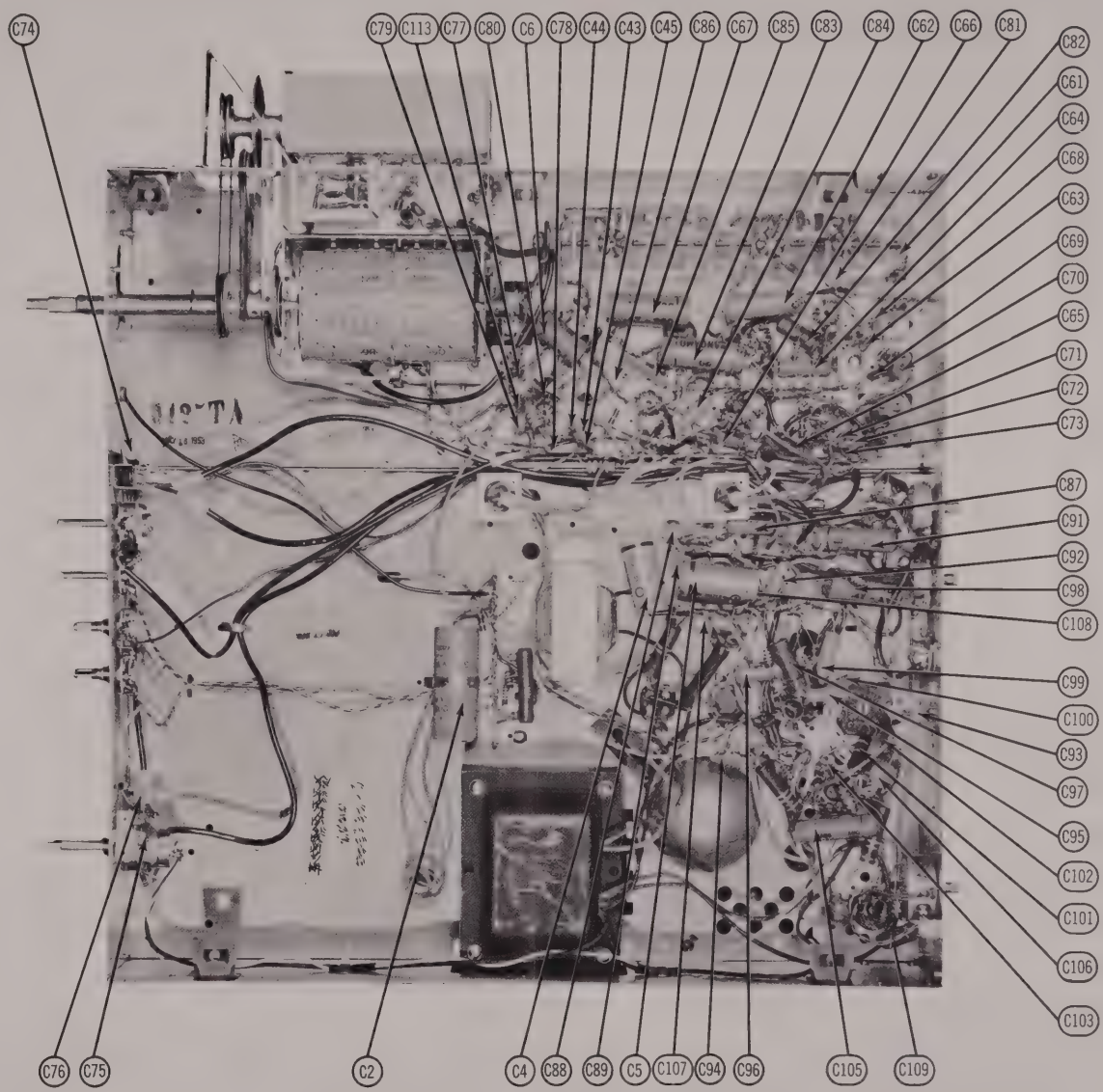

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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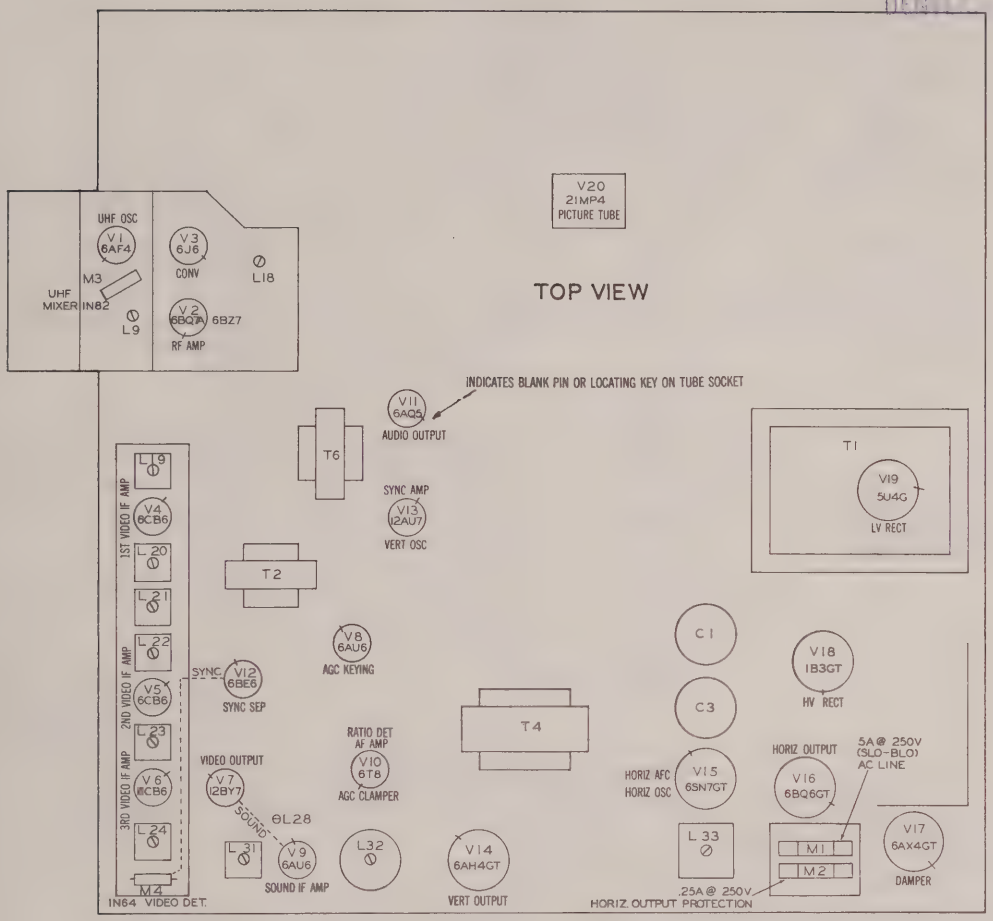
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V9, Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, V6, V7, V11 (V1 UHF only)
No pic, no sound, has snow - V2, V3, V4
No pic, has sound, has raster - V7, V20
Has pic, no sound - V9, V10, V11
Overloaded picture - V8, V10

SYNC FAILURE
No vert. sync - V13
No horiz. sync - V13, V15
No vert. or horiz. sync - V12, V13

SWEEP FAILURE
No raster, has sound - V15, V16, V17, V18, V20, Fuse (M2)
No vertical deflection - V13, V14
Poor vert. linearity or foldover - V13, V14
Poor horiz. linearity or foldover - V15, V16, V17
Narrow picture - V15, V16, V17, V18, V19
Vert. off freq. - V13
Horiz. off freq. - V13, V15

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

The local oscillator may be disabled by placing a piece of transparent cellulose tape on the first two contacts (from front of drum assembly) of any channel strip and then switching the tuner to the unsulated strip. Disabling the local oscillator reduces the posibility of erroneous indications. The local oscillator may also be disabled by removing any oscillator channel strip and switching tuner to that channel.
The antenna terminals should be shorted with a jumper wire. Use only enough sweep generator output to obtain useable pattern on scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (grid) of 6CB6 (V6). Low side to chassis.	43.5MC (10MC Swp)	42MC 45MC	Any	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A1, A2	Detune 2nd. IF transformer by connecting an alligator clip to pin 5 (plate) of 6CB6 (V5). Adjust for response similar to Fig.1. Remove alligator clip from pin 5 of V5.
2.	"	High side to pin 1 (grid) of 6CB6 (V5). Low side to chassis.	"	42MC 43.5MC 44.9MC	"	"	A3, A4	Connect the negative lead of a 3 volt bias battery to the ungrounded side of C67. Connect positive lead to chassis. Adjust for response similar to Fig. 2.
3.	"	High side to pin 1 (grid) of 6CB6 (V4). Low side to chassis.	Not used	41.25MC (Unmod)	"	Use VTVM. DC probe thru 10KΩ to point (A). Common to chassis.	A5	Disconnect bias battery. Adjust for MINIMUM deflection.
4.	"	"	"	47.25MC	"	"	A6	"
5.	"	"	43.5MC (10MC Swp)	42.5MC 44.5MC	"	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A7, A8	Reconnect bias battery as in step 2. Adjust for response similar to Fig. 3.
6.	Direct	High side to ungrounded tube shield floating over converter tube (V3). Low side to chassis.	Not used	39.75MC (Unmod)	"	Use VTVM. DC probe thru 10KΩ to point (A). Common to chassis.	A9	Disconnect bias battery. Adjust for MINIMUM deflection.
7.	"	"	44MC (10MC Swp)	42.5MC 44.5MC	"	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A10, A11	Reconnect bias battery as in step 2. Adjust for response similar to Fig. 4.
8.	"	"	"	39.75MC 41.25MC 45.75MC 47.25MC	"	"		Check for response curve similar to Fig.5. If necessary, retouch A1 thru A4, A7, A8, A10 and A11 to obtain desired response. To observe the 39.75 and 47.25MC markers disconnect the bias battery, increase scope gain and sweep generator output. If necessary, repeat steps 4 and 6.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors in alignment point (D) as shown on the schematic.
Set the contrast control fully counter clockwise.
Remove any video IF amplifier tube (V4, V5 or V6) from its socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any	DC Probe thru 10KΩ point (B). Common to chassis.	A12, A13	Adjust for maximum deflection.
10.	"	"	"	"	DC Probe thru 10KΩ to point (C). Common to point (D).	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. For final adjustment of A14 restore set to normal operating condition and tune in a TV station. Adjust A14 for MINIMUM buzz and clearest sound.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.
Set contrast control fully counter clockwise.
Remove any video IF amplifier tube (V4, V5, for V6) from its socket.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. thru 10KΩ to point (B). Low side to chassis.	A12, A13	Disconnect stabilizing capacitor C6. Adjust for curve of maximum amplitude and symmetry similar to Fig. 6.
10.	"	"	"	"	"	Vert. Amp. thru 10KΩ to point (C). Low side to chassis.	A14	Reconnect stabilizing capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 7. SLIGHTLY retouch A13 for maximum amplitude and straightness of crossover lines. For final adjustment of A14 restore set to normal operating condition and tune in a TV station. Adjust A14 for MINIMUM buzz and clearest sound.

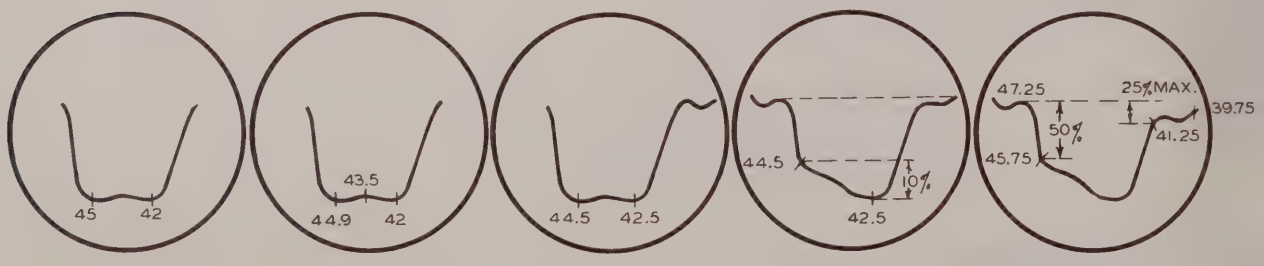


FIG.1 FIG.2 FIG.3 FIG.4 FIG.5

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DENVER, COLORADO

ALIGNMENT INSTRUCTIONS (cont)

4.5 MC TRAP ALIGNMENT

Set contrast control fully counter clockwise. Remove any video IF amplifier tube (V4, V5 or V6) from its socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any	DC Probe thru detector (Fig. 8) to pin 11. (cathode) of picture tube. Common to chassis.	A15	Adjust for minimum deflection. Replace the video IF amplifier (V4, V5 or V6) in its socket.

OSCILLATOR ALIGNMENT

The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the bias supply as in step 2 of "Video IF alignment". Remove the insulating tape (or replace channel strip) placed over the two terminals on the channel strip.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A16	Adjust to place sound marker in trap notch as in Fig. 9. Video marker should be at 50%.
			213MC (10MC Swp)	211.25MC 215.75MC	13		A17	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A18	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A19	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A20	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A21	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A22	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A23	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A24	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A25	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A26	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A27	

RF AND MIXER ALIGNMENT

Connect the bias supply as in step 2 of "Video IF alignment".
Connect .001MFD capacitor across the vertical amplifier input terminals of scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (E). Low side to tuner chassis.	A28, A29, A30	Adjust for response curve similar to Fig. 10 with markers above 90%.
14.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13			Check for response curve similar to Fig. 10. If markers fall below 70% on any channel make compromise adjustments of A28, A29 and A30 with channel switch set to that channel, then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

UHF TUNER ALIGNMENT

The UHF tuner has been properly aligned at the factory and is very stable. If this portion of the receiver should ever require alignment or major repair the entire unit should be disconnected and returned to the factory.

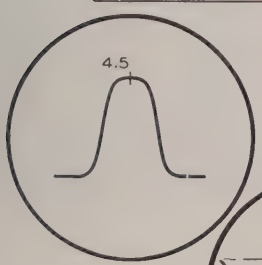


FIG.6

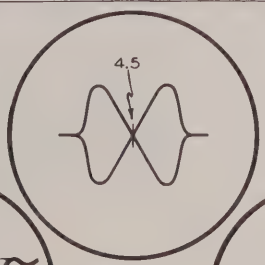


FIG.7

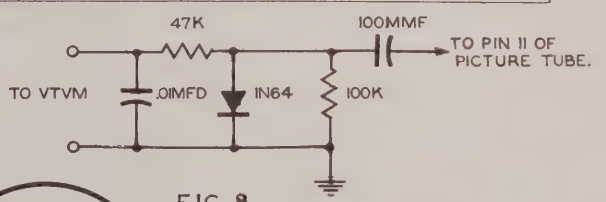


FIG.8

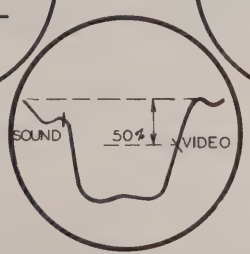


FIG.9

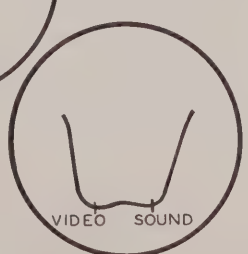


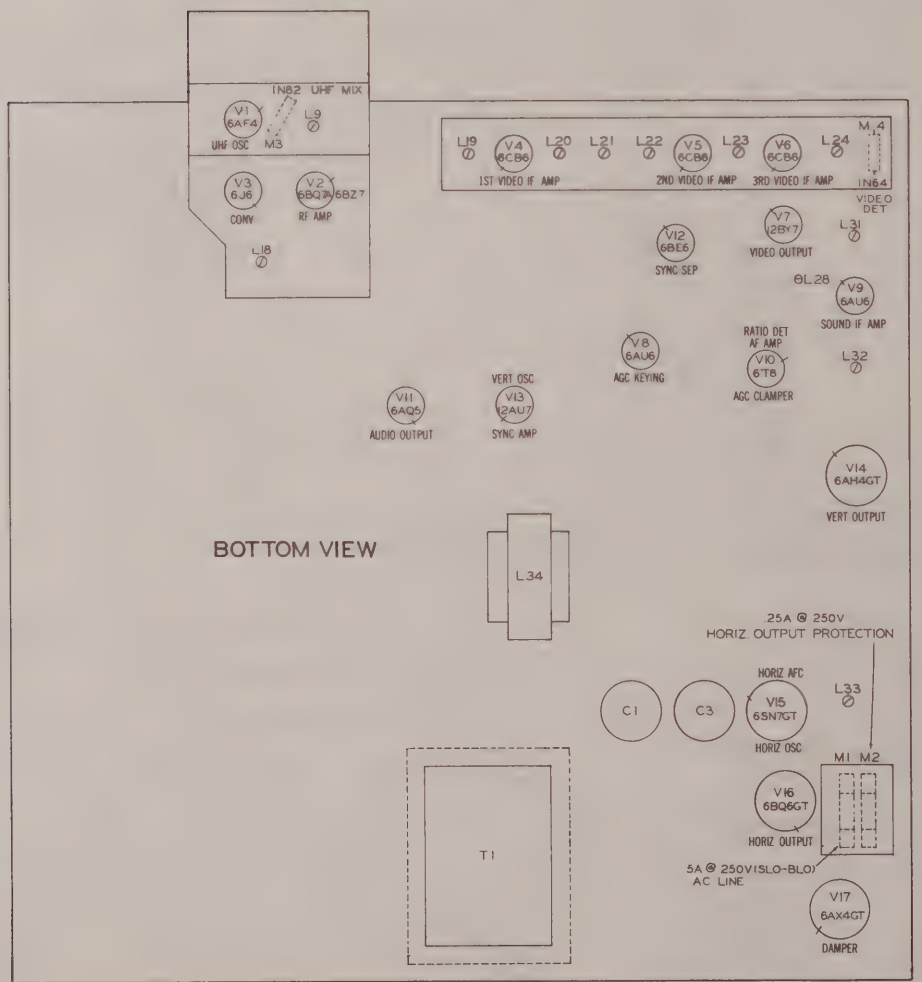
FIG.10

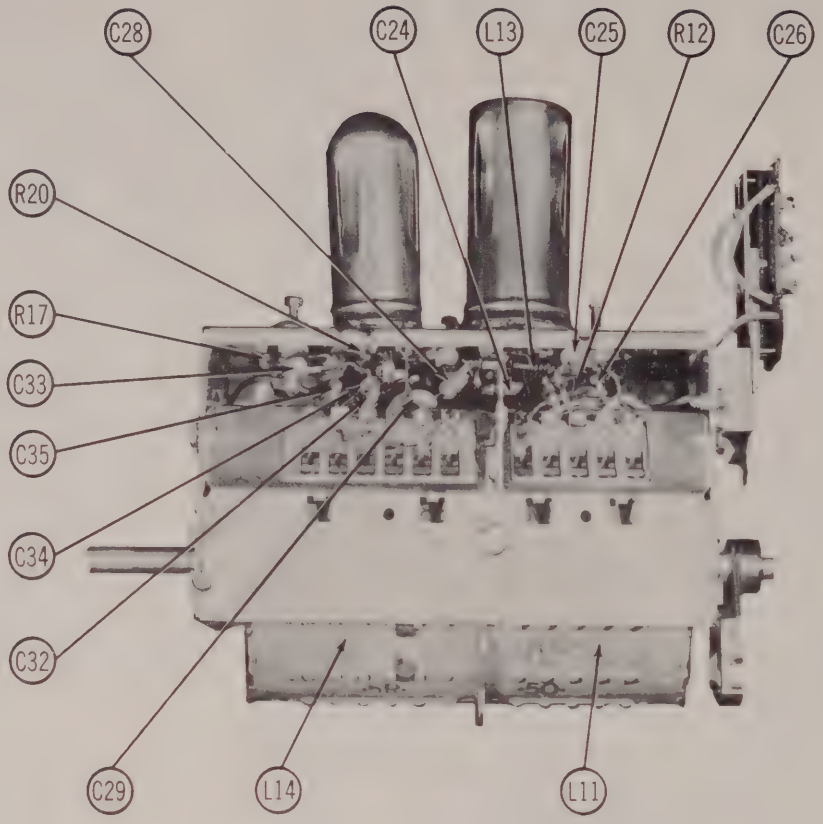
CORONADO MODELS
45TV13-43-9038A, 45TV13-43-9081A

RESISTANCE MEASUREMENTS

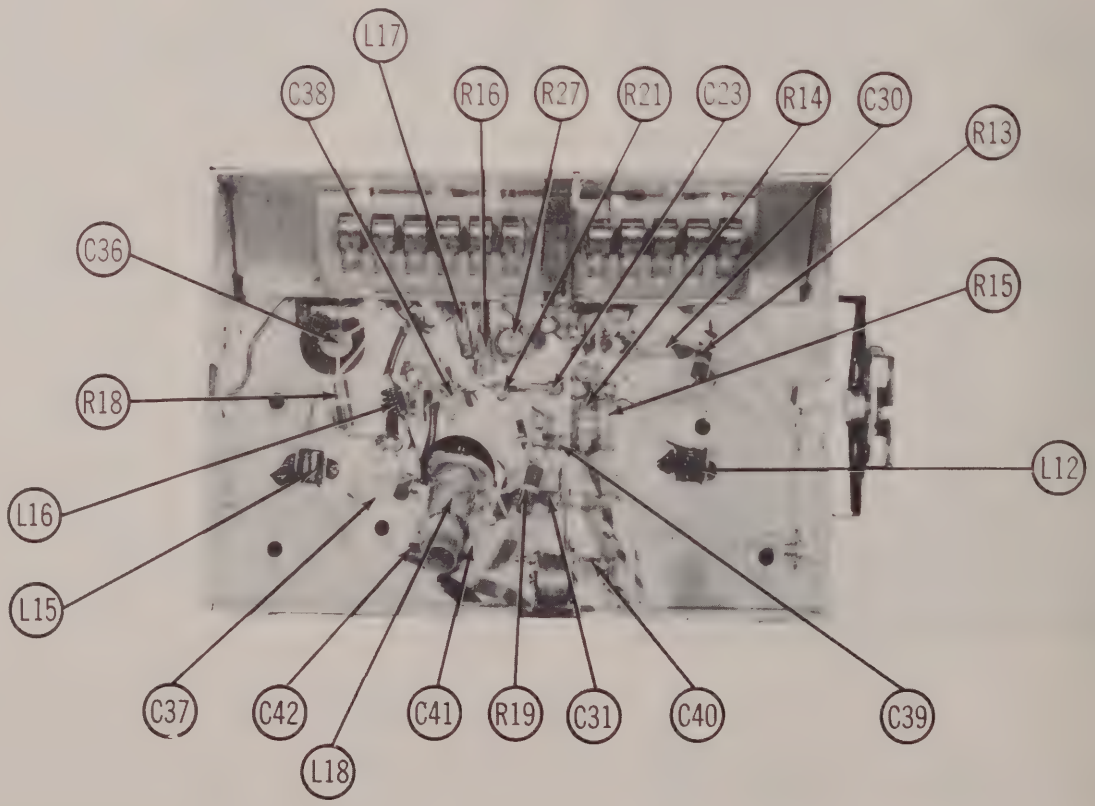
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	▲■ 2. 8KΩ	12KΩ	0Ω	. 2Ω	0Ω	12KΩ	▲■2. 8KΩ		
V 2	6BQ7A	INF	150KΩ	0Ω	. 1Ω	0Ω	† 5. 9KΩ	160KΩ	INF	0Ω
V 3	6J6	▲4. 8KΩ	▲15KΩ	. 1Ω	0Ω	235KΩ	10KΩ	0Ω		
V 4	6CB6	107KΩ	47Ω	0Ω	. 1Ω	♦1. 2KΩ	♦8KΩ	0Ω		
V 5	6CB6	♦6. 8KΩ	♦47Ω	▲ 100K	▲ 100K	† 1. 2KΩ	† 1. 2KΩ	70KΩ		
V 6	6CB6	1. 3Ω	82Ω	. 1Ω	0Ω	▲ 470Ω	▲ 470Ω	0Ω		
V 7	12BY7	150Ω	5. 6KΩ	150Ω	. 1Ω	. 1Ω	0Ω	† 20KΩ	▲ 8. 2KΩ	150Ω
V 8	6AU6	† 50KΩ	† 15. 5KΩ	▲ 100KΩ	▲ 100KΩ	200KΩ	† 670Ω	† 15. 5KΩ		
V 9	6AU6	1Ω	0Ω	. 1Ω	0Ω	▲ 4. 7KΩ	▲ 4. 7K Ω	82Ω		
V 10	6T8	INF	22KΩ	INF	. 1Ω	0Ω	100KΩ	0Ω	10 Meg	▲ 470KΩ
V 11	6AQ5	360KΩ	† 11. 5K	▲ 100KΩ	▲ 100KΩ	† 1KΩ	† 670Ω	360KΩ		
V 12	6BE6	† 835KΩ	0Ω	. 1Ω	0Ω	22KΩ	▲ 82KΩ	2. 2Meg		
V 13	12AU7	◓ 1. 9Meg	2. 2Meg	0Ω	0Ω	0Ω	† 38KΩ	† 10 Meg	†15. 5KΩ	. 1Ω
V 14	6AH4GT	2. 2 Meg	0Ω	▲ 100KΩ	2. 2 Meg	† 820Ω	▲ 100KΩ	. 1Ω	2K	
V 15	6SN7GT	1. 5Meg	† 90KΩ	430KΩ	480KΩ	† 70KΩ	0Ω	. 1Ω	0Ω	
V 16	6BQ6GT	† 470Ω	. 1Ω	480KΩ	† 10. 5KΩ	470KΩ	† 70KΩ	0Ω	100Ω	TOP CAP ◓ 17Ω
V 17	6AX4GT	INF	† 1. 3KΩ	10 Meg	† 75Ω	† 650Ω	† 470Ω	▲ 100KΩ	▲ 100KΩ	
V 18	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								TOP CAP ◓ 412Ω
V 19	5U4G	INF	17KΩ	INF	25Ω	INF	25Ω	INF	17KΩ	
V 20	21MP4	▲ 100KΩ	108KΩ	PIN 6 0Ω	PIN 10 ◓ 330KΩ	PIN 11 † 140KΩ	PIN 12 ▲ 100KΩ			

■ MEASURED IN UHF POSITION.
† MEASURED FROM PIN 8 OF V19.
♦ MEASURED FROM PIN 7 OF V5.
▲ MEASURED FROM 120V line.
◓ MEASURED FROM PIN 3 OF V17.





VHF TUNER-RIGHT SIDE



VHF TUNER-BOTTOM VIEW

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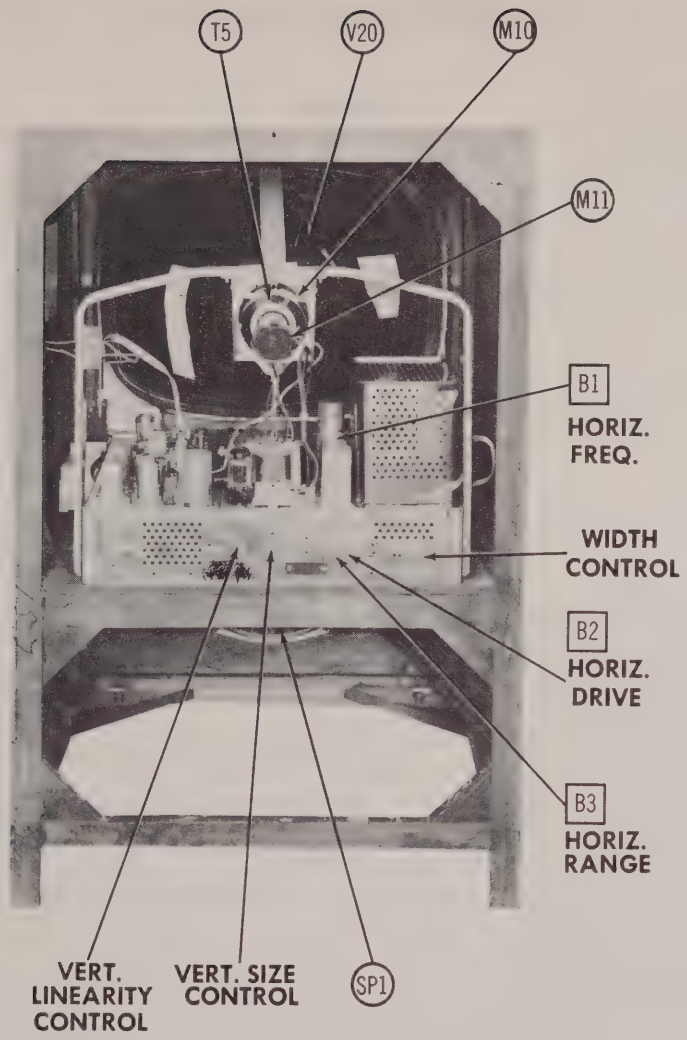


CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

The following adjustments are for receivers that do not include the letter "E" in the series designation on the rear of the chassis.
Turn the set on and tune in a TV station, preferably a test pattern.

1. Set the horizontal frequency slug (B1) and the horizontal waveform slug (B2) fully counter clockwise.
2. Short terminal "C" to terminal "D" on L33.
3. Turn the horizontal range trimmer (B3) fully clockwise.
4. Set the horizontal hold control fully counter clockwise.
5. Adjust B1 until picture just locks in horizontally.
6. Remove short from terminals "C" and "D" on L33. If necessary, adjust B2 until picture locks in.
7. Connect the vertical amplifier of an oscilloscope to terminal "C" of L33. Connect low side to chassis. Adjust B2 for waveform similar to Fig. 11.
8. Set horizontal hold control counter clockwise and adjust B1 until picture locks in and remains in sync when switching off channel and back again. Adjust B1 slowly counter clockwise until picture is just ready to lose sync.
9. Check for proper horizontal hold action as follows:
   a. Turn horizontal hold control fully counter clockwise. Switch off channel and back again. Picture may remain in or be just out of sync.
   b. Turn horizontal hold control fully clockwise. Switch off channel and back again. Picture may lose sync.
   c. With horizontal hold control in its mid-range position picture should remain in sync when switching off channel and back again.

For receivers that include the letter "E" in the series designation on the rear chassis.

1. Same as for chassis that do not include "E" designation.
2. Same as for chassis that do not include "E" designation.
3. Set the horizontal driver trimmer (B') $\frac{1}{2}$ turn from its fully clockwise position.
4. Set the horizontal hold control to its fully clockwise position.
5. (thru 9) . Same as for chassis that do not include "E" designation.

Adjust the horizontal drive trimmer (B4) counter clockwise as far as possible without the presence of vertical white lines or compression near the center of the picture.
Adjust the width control (R8A) for a picture that is slightly wider than necessary to fill the picture mask horizontally. It may be necessary to recheck B4 and alternately readjust B4 and R8A to obtain proper width with best linearity.

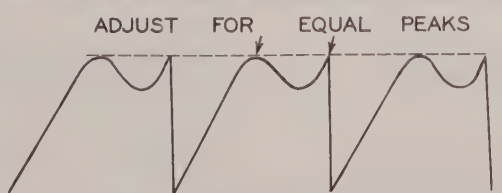


FIG. 11

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V15, V16, V17 and V19. Check adjustment of the width control and B4. Check waveform W16.

If Satisfactory	If Unsatisfactory
Check C105, C107, C108, C109, R100, R101, R107, R8, T3, T5A and other associated circuit components.	Check R94, R98, C102, C103 and other associated components.

DRIVE LINES

Check adjustment B4. Check by substitution V16 and V17. Check C102, C103, C107, C108, C109, T3, T5A, C112 and other associated circuit components.

COMPRESSED LEFT SIDE

Check adjustment of the width control and B4. Check by substitution V16 and V17. Check components associated with the horizontal output especially T3 and T5A.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V16 and V17. Check T3 and T5A for internal arcing.

XMAS TREE EFFECT

Substitute V15. Check adjustments B1, B2 and B3. Check C100, L33 and other associated circuit components.

VERTICAL

LOSS OF SWEEP

Check by substitution V13 and V14. Check waveform W10.

If Satisfactory	If Unsatisfactory
Check T4, T5B, R6, R82 and other associated circuit components.	Check R76, R77, R81, C91, T2 and other associated circuit components.

INSUFFICIENT SWEEP

Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Check by substitution V13 and V14. Check T4, T5B, C3B and other associated circuit components.

COMPRESSED AT TOP

Check by substitution V13 and V14. Check T2, C87, C91, R79, R81 and other associated circuit components.

FOLDS

Check by substitution V13 and V14. Check components associated with V13B and V14 for failure or change of value.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V12 and V13. Check C81, C82, C84, R62, R63, R65, R66, R67, R68, R69 and other associated circuit components.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Check by substitution V12 and V13. Check waveform W8.

If Satisfactory	If Unsatisfactory
Check T2, R75, R74, vertical hold control, C86 and other associated circuit components.	Check vertical integrator and other associated circuit components. Check video IF and amplifier stages for overloading.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Substitute V15. Check adjustments B1, B2 and B3. Check C100, C101, C92, C93, C94, C95, L33 and other associated circuit components for failure or change of value.

HORIZONTAL BENDING

Check by substitution V15 and V16. Check the horizontal AFC filter network for component failure or change of value.

VIDEO

LOSS OF VIDEO

Substitute V7. Check video detector crystal and assembly. Check picture tube and associated circuit components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best picture and sound. Check A15 and video IF alignment.

POOR CONTRAST

Substitute V7. Check video detector assembly. Check contrast control, picture tube and other associated components.

NEGATIVE PICTURE

Check by substitution V7, V8, V2, V4 and V5. Check video detector crystal and assembly. Check AGC network components. Check picture tube and components associated with the video IF and tuner stages.

SMEAR

Substitute V7. Check video detector assembly. Check C64, R42, R41, R46, L29, L30, picture tube and other associated components for failure or change of value.

WIDE BLACK BAR ACROSS PICTURE

Check V2, V4, V5, V6 and V7 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V9, V10 and V11. Check stages V10B and V11 using audio signal generator. Apply audio signal across R57.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check R58, R59, R60, T6, C78, C80 and other associated components.

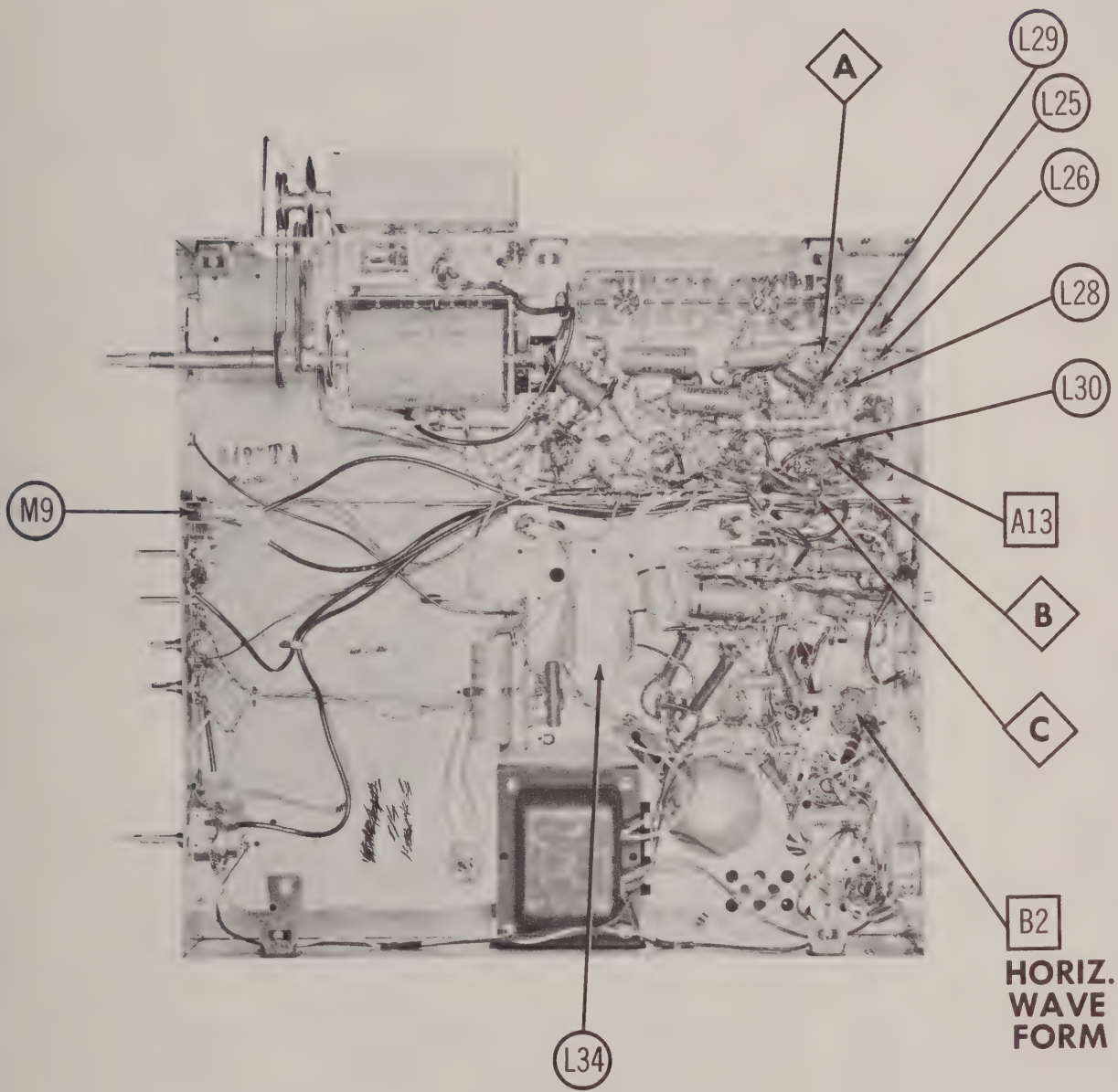
BUZZ

Adjust tuner fine tuning for best picture and sound. Adjust A14 for minimum buzz. If still unsatisfactory, substitute V10 and realign audio IF and ratio detector stages. Check C71, and C6 for leakage.

DISTORTED

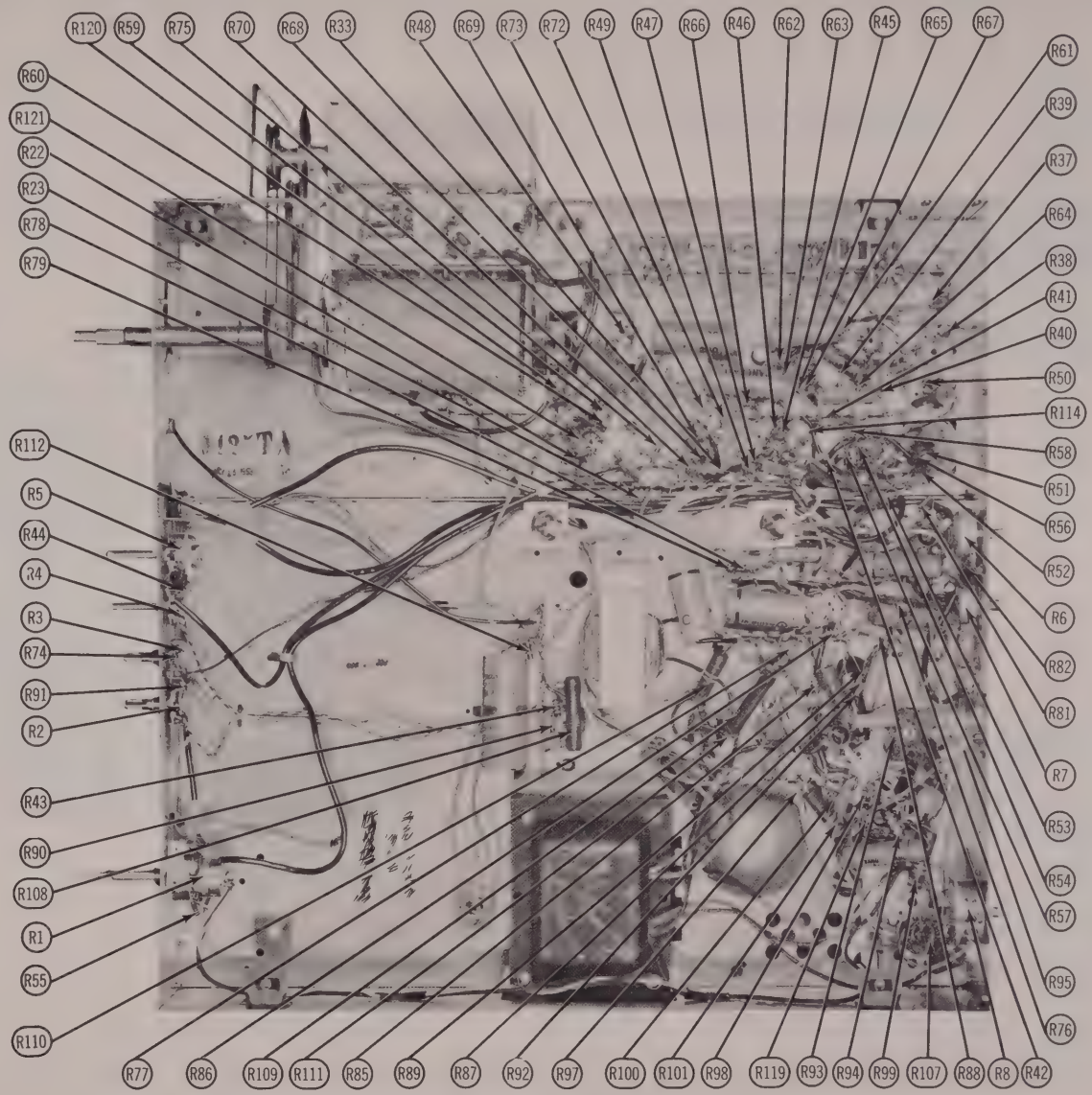
Follow procedure outlined under "Weak or No Sound".

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW- INDUCTOR AND ALIGNMENT IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

PROPERTY OF
L. F. BLANKENSHIP
3077 MEADE ST.
DENVER, COLORADO

ITEM No.	USE	REPLACEMENT DATA: CORONADO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	UHF Oscillator	6AF4	6AF4	7DK	
V2A	RF Amplifier	6BQ7A	6BQ7A	9AJ	
B	RF Amplifier	6BZ7	6BZ7	9AJ	
V3	Converter	6J6	6J6	7BF	
V4	1st. Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Output	12BY7	12BY7	9BF	
V8	AGC Keying	6AU6	6AU6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Det.- AF Amp. - AGC Clamper	6T8	6T8	9E	
V11	Audio Output	6AQ5	6AQ5	7BZ	
V12	Sync Separator	6BE6	6BE6	7CH	
V13	Sync Amplifier- Vert. Oscillator	12AU7	12AU9	9A	
V14	Vert. Output	6AH4GT	6AH4GT	8EL	
V15	Horiz. AFC- Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V16	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V17	Damper	6AX4GT	6AX4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: CORONADO PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V20	21MP4	21MP4	21MP4		21MP4	12M	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	508072	AFH3-44		C035		FP377	TVL-3787	
B	▲40	450								
C	■40	450								
C2	40	300	160095	PRS450/40		BR4035		TC78	TVA-1611	
C3A	▲80	250	509002	AFH3-142		C109		FP375	TVL-3802	
B	■100	50								
C4	4	450	504719	PRS450/4		BR445		TC70	TVA-1702	
C5	4	450	504719	PRS450/4		BR445		TC70	TVA-1702	
C6	10	150	505174	PRS150/12		BR1015		TC42	TVA-1406	
C7	1			SI1NP0	TCZ-1	TZ03	NP0K-010		5TCCB-V1	
C8	1			SI1NP0	TCZ-1	TZ03	NP0K-010		5TCCB-V1	
C9	2.4									
C10	.8-6.5									
C11	.25									
C12	.25									
C13	.8-6.5									
C14	2.5									
C15	2.2			SI2.2NP0	TCZ-2.2	TZ05	NP0K-2R2		5TCCB-V22	
C16	3-10									
C17	6									
C18	68			SI68	D6-680	TP32	GP1K-680	UC-5468	5GA-Q68	
C19	68			SI68	D6-680	TP32	GP1K-680	UC-5468	5GA-Q68	
C20	.7									
C21	8									
C22	100									
C23	3-9		509064		829-10					
C24	800			EF-001	MFT-1000				503C-D1	
C25	3		513453	SI3NP0	TCZ-3	Z007	NP0K-030	ZT-5533	5TCCB-V33	
C26	800			EF-001	MFT-1000				503C-D1	
C27	.5-3		509063		829-3		3115-01-0R5	CT565A		
C28	1.5		513033	SI1.5NP0	TCZ-1.5	Z004	NP0K-1R5	ZT-5515	5TCCB-V15	
C29	68		513040	SI68	D6-680	G038	811-680	UC-5468	5GA-Q68	
C30	1000		513041	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C31	800			EF-001	MFT-1000				503C-D1	
C32	47		520719	BPD-000047	D6-470	G033	801-470	UC-5447	5GA-Q47	
C33	.5-3		509063		829-3		311-01-0R5	CT565A		
C34	10		513437	SI10NP0	TCZ-10	Z018	NP0K-100	ZT-541	5TCC-Q1	
C35	5		513450							
C36	1000		513041	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C37	6.8		513451	SI6.8N P0	TCZ-6.8	Z013	NP0K-6R8	ZT-5568	5TCCB-V68	
C38	1000		513041	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C39	800			EF-001	MFT-1000				503C-D1	
C40	800			EF-001	MFT-1000				503C-D1	
C41	1000		513009	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C42	110		513452			G043	GP2K-111			
C43	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C44	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C45	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	Note 1
C46	8.2		513455							
C47	1500		513038	SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
C48	470		513037	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C49	1500		513038	SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
C50	470		513037	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C51	1500		513038	SI5100	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
C52	12		513448							
C53	5		513449							
C54	1500		513038	SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	Note 2
C55	470		513037	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C56	1500		513038	SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
C57	680		513044	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	Note 3
C58	1500		513038	SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
C59	1500		513038	SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	Note 4
C60	4		513454							
C61	5		513432	SI5NP0	TCZ-4.7	TZ07	NP0K-050	ZT-555	5TCCB-V47	
C62	.22	200	512238	P288-22		CUB2P22		PT4022	2TM-P22	
C63	47		513438	SI47NP0	TCZ-47	TZ22	NP0K-470	ZT-5447	5TCC-Q47	
C64	.1	200	512216	P288-1	DF-104	CUB2P1		PT401	2TM-P1	

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.

CAPACITORS (cont)

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA CORONADO PART No	AEROVOX PART No	CENTRALAB PART No	CORNELL DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C85	.047	200	512235	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	
C86	220	1000	513032	HVD15-00022		VT22		IR5KV-221	10GA-T22	
C87	.47	300	512239	P288-47		CUB2P47		PT4047	2TM-P47	
C88	2.2		513001	SI2.2NPO	TCZ-2.2	T205	NP0K-2R2		5TCCB-V22	
C89	5000		513013	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C90	5000		513013	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C91	1500		513010	SIl500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
C92	1500		513010	SIl500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
C93	5000		513013	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C94	.047	200	512235	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	
C95	5000		513013	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C96	5000		513013	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C97	270		513006	SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C98	.01	400	512205	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C99	.01	400	512205	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C80	5000		513013	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C81	5000		513013	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C82	.047	200	512235	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	
C83	.47	200	512239	P288-47		CUB2P47		PT4047	2TM-P47	
C84	.01	400	512205	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C85A	.01							PT611		
B	.002		*508082	BPD-01	DD-103	K082	* 81L-01	PT622	5HK-S1	
C	.005			PA-110	PC-100	U5TM1	1405-01	PT625	10JC1	
D	.005							PT625		
C86	4700	1000	512533							
C87	.047	400	512235	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C88	.022	400	512233	P488-022	DF-203	CUB4S22	81T-02	PT4122	4TM-S22	Note 5
C89	.01	200	512205	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	Note 6
C90	.1	200	512216	P288-1	DF-104	CUB2P1		PT4P1	2TM-P1	Note 7
C91	.1	600	512218	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C92	100	500	512502	1469-0001		22R5T1		MCB235	MS-31	
C93	10-160		WS20991							Note 8
C94	47	1000	513030	HVD15-000047		VQ47		IR5KV-470	10GA-Q47	
C95	.0022	400	512232	P688-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C96	.047	400	512235	P488-074	DF-503	CUB4S47		PT4147	4TM-S47	
C97	.047	200	512235	P2SF-047	DF-503	CUB2S47		PT4147	2TM-S47	
C98	.47	200	512239	P288-47		CUB2P47		PT4047	2TM-P47	
C99	.022	400	512233	P488-022	DF-203	CUB4S22	81T-02	PT4122	4TM-S22	
C100	200		513427							
C101	.01	400	512205							Note 9
C102	820	500	512547							
C103	1000		513009	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C104	270		513006	SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	Note 10
C105	.1	600	512218	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C106	.22	400	512238	P488-22		CUB4P22		PT4022	4TM-P22	
C107	.047	600	512237	P688-047		CUB6S47		PT6147	6TM-S47	
C108	.022	600	512234	P688-022		CUB6S22		PT6122	6TM-S22	
C109	.047	200	512235	P288-047		CUB2S47		PT4147	2TM-S47	
C110	500	30000	513999	HV30C	TV3-502	MAM10G75	413	HV30035A	30DK-T5	
C111	100		512502	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	Note 10
C112	56	1500	513027				3KV-560		20GA-Q56	
C113	5000		513013	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C114	5000		513013	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	Note 11
C115	1500		513010	SIl500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	Note 11
C116	1500		513010	SIl500	D6-152	TP54	GP2K-152	UC-5215	5HK-D15	Note 11
C117	680		513044	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	Note 12

Note 1. Value changed to 9MMF (part #513447) when letter "A" is not included in series designation.
Note 2. Used only when letter "A" is included in series designation.
Note 3. Value changed to 470MMF (part #513037) when letter "A" is not included in series designation.
Note 4. Value changed to 8MMF (part #513443) when letter "A" is not included in series designation.
Note 5. Some models may use .03MFD or 5000MF in this application.
Note 6. Not used in all Models.
Note 7. Used only when letter "G" is included in series designation.
Note 8. Some models may use a 47MMF in this application (part #513030).
Note 9. Mfg'r part number becomes 512311 when letter "F" is included in series designation.
Note 10. Used only when letter "E" is included in series designation.
Note 11. Used only when letter "A" is not included in series designation.
Note 12. Used only when letter "K" is included in series designation.
* Items C85A, C85B, C85C, C85D, R73A, R73B, R73C are combined in one unit.
† To preplace mfgr's original item, install 10000MMF unit in series with C-R unit input lead.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	300Ω		521288	*QJ-517			WF32	Contrast -Panel
B	1Meg						UR16-T23†	Volume-tapped @ 220KΩ-Rear
C	Switch						US-26	Attach to R1B
R2A	50KΩ	½	521059	Q11-123	A47-50K-S	AB-31	U-55	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	1Meg	½	521068	Q11-137	A47-1Meg-S	AB-59	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A
R4A	100KΩ	½	509893	Q11-128	A47-100K-S	AB-40	U-41	Brightness
B	Shaft		Not Req.	Not Req.	RS-3/8	AK-4	Not Req.	Attach to R4A
R5A	500KΩ	½	520651	Q11-132	A47-500K-S	AB-59	U-50	Tone - Note 1
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R5A
R6A	5000Ω	½	520945	Q17-114	A47-5000-S	AB-12	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	2.5Meg	½	520944	Q11-239	A47-2.5Meg-S	AB-83	SU-565	Vert. Size
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A
R8A	400Ω	4	520996	4WK-400	A10-400	SVP-991	M400P	Width
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R8A

* CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B11-103 & P1-112 (Panel)
B13-187K R1-202 (Rear) & SWITCH 76-1.
† UNIVERSAL REPLACEMENT (Mallory exact duplicate part #UE4WS).
Note 1. Some models may use an alternate control part #520746.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA CORONADO PART No.	IRC PART No.	NOTES
R9	470KΩ			BTS-470K	
R10	470KΩ			BTS-470K	
R11	12KΩ			BTS-12K	
R12	15KΩ			BTS-15K	
R13	47KΩ			BTS-47K	
R14	330KΩ			BTS-330K	
R15	220KΩ			BTS-220K	
R16	470Ω			BTS-470	

RESISTORS (cont)

ITEM No	RATING OHMS	RATING WATT	REPLACEMENT DATA CORONADO PART No	IRC PART No	NOTES
R17	15KΩ			BTS-15K	
R18	220KΩ			BTS-220K	
R19	15KΩ			BTS-15K	
R20	10KΩ			BTS-10K	
R21	4700Ω			BTS-4700	
R22	100Ω		510118	BTS-100	
R23	4700Ω	2	510348	BTB-4700	
R24	6800Ω		510151	BTS-6800	
R25	47Ω		510112	BTS-47	
R26	6800Ω		510151	BTS-6800	Note 17
R27	1200Ω		510138	BTS-1200	
R28	24KΩ 5%		510783	BTS-24KΩ 5%	
R29	100KΩ		510172	BTS-100K	Note 20
R30	120KΩ		510174	BTS-120K	Note 20
R31	6800Ω		510151	BTS-6800	Note 18
R32	47Ω		510112	BTS-47	
R33	470Ω			BTS-470	Note 20
R34	8200Ω		510153	BTS-8200	
R35	82Ω		510117	BTS-82	Note 19
R36	470Ω		510130	BTS-470	
R37	6800Ω		510151	BTS-6800	Note 15
R38	5600Ω		510150	BTS-5600	
R39	8200Ω		510153	BTS-8200	
R40	15KΩ 5%		510744	BTS-15K 5%	Note 12
R41	3900Ω		510247		Note 13
R42	100KΩ			BTS-100K	
R43	470KΩ			BTS-470K	Note 9
R44	22KΩ			BTS-22K	Note 15
R45	33KΩ		510163	BTS-33K	
R46	1500Ω		510139	BTS-1500	Note 14
R47	100KΩ		510172	BTS-100K	
R48	100KΩ		510172	BTS-100K	
R49	3.3Meg		510701	BTS-3.3Meg	
R50	82Ω		510117	BTS-82	
R51	4700Ω		510249	BTA-4700	
R52	220Ω		510124	BTS-220	
R53	18KΩ		510159	BTS-18K	
R54	22KΩ		510160	BTS-22K	
R55	68KΩ		510169	BTS-68K	
R56	220Ω		510124	BTS-220	
R57	10Meg		510197	BTS-10Meg	
R58	470KΩ		510184	BTS-470K	
R59	560KΩ 5%		510778	BTS-560K 5%	
R60	820KΩ 5%		510747	BTS-820K 5%	
R61	47KΩ		510166	BTS-47K	
R62	2.2Meg		510193	BTS-2.2Meg	
R63	820KΩ			BTS-820K	Note 6
R64	18KΩ		510159	BTS-18K	
R65	82KΩ		510171	BTS-82K	
R66	22KΩ		510160	BTS-22K	
R67	220KΩ		510178	BTS-220K	
R68	10Meg		510197	BTS-10Meg	
R69	22KΩ		510160	BTS-22K	
R70	10KΩ		510148	BTA-10K	Note 7
R71	4700Ω	1	510254	BTA-4700	
R72	18KΩ		510159	BTS-18K	
R73A	22KΩ			BTS-22K	
B	8200Ω		*508082	BTS-8200	
C	8200Ω			BTS-8200	
R74	220KΩ		510178	BTS-220K	
R75	1.2Meg 5%		510777	BTS-1.2Meg 5%	
R76	470KΩ		510184	BTS-470K	
R77	330KΩ		510181	BTS-330K	
R78	100KΩ		510172	BTS-100K	Note 11
R79	8200Ω		510153	BTS-8200	
R80	47KΩ		510167	BTS-47K	Note 15
R81	2.2Meg		510193	BTS-2.2Meg	
R82	390Ω		510139	BTS-390	
R83	560Ω		510132	BTS-560	
R84	560Ω		510132	BTS-560	
R85	330KΩ		510181	BTS-330K	
R86	820KΩ		510189	BTS-820K	
R87	100KΩ		510172	BTS-100K	
R88	330KΩ	1	510262	BTA-330K	
R89	4700Ω		510148	BTS-4700	
R90	68KΩ		510169	BTS-68K	
R91	120KΩ		510174	BTS-120K	
R92	150KΩ		510175	BTS-150K	
R93	10KΩ		510154	BTS-10K	
R94	68KΩ	1	510269	BTA-68K	
R95	150KΩ		510175	BTS-150K	Note 3
R96	150KΩ		510175	BTS-150K	Note 5
R97	330KΩ		510181	BTS -330K	Note 4
R98	470KΩ	2	510184	BTS-470K	
R99	100Ω	2	510318		
R100	47KΩ	1	510166	BTS-47K	
R101	12KΩ	2	510356	BTB-12K	
R102	150KΩ		510175	BTS-150K	Note 8
R103	56KΩ		510168	BTS-56K	Note 8
R104	1 Meg		510190	BTS-1 Meg	Note 8
R105	3.3Ω		510725		
R106	1 Meg	1	510190	BTA-1 Meg	
R107	680Ω	2	510134	BTS-680	
R108	600Ω	10	510741	1 3/4A-600	
R109	400Ω	10	510779	1 3/4A-400	
R110	15KΩ	2	510357	BTS-15K	
R111	1500Ω	1	510139	BTS-1500	
R112	10Ω	1	510101	BTS-10	
R113	150KΩ		510175	BTS-150K	
R114	100KΩ	1	510173	BTS-100K	
R115	7500Ω	5	510727		Note 2
R116	470KΩ		510184	BTS-470K	Note 10
R117	2200Ω	1		BTS-220	Note 16
R118	680Ω	1		BTS-680	Note 20
R119	10KΩ	2		BTS-10K	Note 21
R120	4700Ω	2		BTB-4700	
R121	2700Ω	2		BTB-2700	

* Items R73A, R73B, R73C, C85A, C85B, C85C, C85D are combined in one unit.
Note 1. R75 becomes 1.5Meg when the letter "B" is not included in series designation.
Note 2. R115 is omitted when the letters "A" and "C" are used in series designation.
Note 3. R95 becomes 220KΩ when the letter "E" is included in series designation.
Note 4. R97 becomes 1Meg when the letter "E" is included in series designation.
Note 5. Add R96 when the letter "E" is included in the series designation.
Note 6. R63 becomes 1.5MEg when the letter "E" is included in series designation.
Note 7. R71 becomes 4700Ω and add R70 when the letter "E" is included in series designation.
Note 8. Add R102, R103, R104 when the letter "E" is included in series designation.
Note 9. R43 becomes 330KΩ when the letter "E" is included in series designation.
Note 10. Add R116 when the letter "C" is included in series designation.
Note 11. R78 becomes 47KΩ when the letter "C" is included in series designation.
Note 12. R40 becomes 12KΩ when the letter "E" is included in series designation.
Note 13. R41 becomes 2200Ω when the letter "E" is included in series designation.
Note 14. R46 becomes 1800Ω when the letter "E" is included in series designation.
Note 15. Not used in all models.
Note 16. R117 is omitted when the letter "A" is included in series designation.
Note 17. R26 becomes 8200Ω when the letter "A" is not included in series designation.
Note 18. R31 becomes 10KΩ when the letter "A" is not included in series designation.
Note 19. R35 becomes 56Ω when the letter "A" is not included in series designation.
Note 20. Used only when the letter "A" is not included in series designation.
Note 21. Used only when the letter "E" is not included in series designation.

TRANSFORMER (POWER)

ITEM No.	USE	RATING PRI.	RATING SEC 1	RATING SEC 2	RATING SEC 3	RATING SEC 4	RATING SEC 5	REPLACEMENT DATA CORONADO PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T1		117VAC @1.75A	680VCT .190ADC	5VAC @ 3A		6.3VAC @2.8A	12.6VCT @3A	520951						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA CORONADO PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T2	Vert. Osc. Trans.	520980	A-8125	A-3003	A-97X	209T①②	B6702	24A87①
T3	Horiz. Output Trans.	521068		HV0-9 *	D-19 *	232T1 *	FB41l *	
T4	Vert. Output Trans.	520975 ③	A-8123①	A-3037①	A-102X①	222T①②	Z1804 ①	26S52 ①
T5A	Yoke-Horiz.(13MH)	520942 ④	DY-9A ⑥ ⑦	MDF-72① ④	Y-17-①②③	21UDA① ②	DF603① ②	Y-7 ①②
B	Yoke-Vert. (37MH)	521267⑤						

① Drill one new mounting hole.
② Drill new mounting holes.
③ Includes connectors for deflection yoke leads.
④ Includes leads, connectors and resistors R83 and R84.
⑤ Yoke cover and positioning device.
⑥ Use original yoke cover and positioning device.
⑦ Remove C112 from yoke terminal strip on top of vertical output trans.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Stancor Replacement Connections	Merit Replacement Connections	Triad Replacement Connections	RCA Replacement Connections	Halldorson Replacement Connections	Thordarson Replacement Connections
	8		Hi-Volt Rect. Plate Lead	Hi-Volt Rect. Plate Lead	Hi-Volt Rect. Plate Lead	Hi-Volt Rect. Plate Lead	
	7		9	9	10	9	
	6		7	7 & 8	8	8	
	5		5	5	6	5	
	3		T	T	5	4	
	2		3	3	2 & 3	T or 3	
	1		1	1	1	1	
	Special Notes →				⑧		

⑧ If insufficient width, connect a .005MFD 600V capacitor across terminal "T" and #3.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI	IMPEDANCE SEC	REPLACEMENT DATA CORONADO PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T6	4.3KΩ	3.3Ω	509376	A-3877	A-2930	S-5X	Z1001	22S46	

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V C IMP	REPLACEMENT DATA CORONADO PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	6 x 9"	PM	3.3Ω	506174	ST-810 Mod. P69-V	69A2	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA CORONADO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1A	UHF Ant. Coil	0Ω						
B	UHF Mixer Coil	0Ω						
C	UHF Osc. Coil	0Ω						
L2	UHF Ant. Coil End							
	Inductor	0Ω						
L3	UHF Mixer Coil End							
	Inductor	0Ω						
L4	UHF Osc. Coil End							
	Inductor	0Ω						
L5	Fil. Choke	.2Ω						
L6	Fil. Choke	.2Ω						
L7	Cathode Choke	.1Ω						
L8	UHF IF Coupling	.1Ω						
L9	UHF IF Output Coil	0Ω	0Ω					
L10	RF Choke	.1Ω						
L11A	VHF Ant. Coil	0OCT	0Ω	521822				Channel 2
B	VHF Ant. Coil	0OCT	0Ω	521823				Channel 3
C	VHF Ant. Coil	0OCT	0Ω	521824				Channel 4
D	VHF Ant. Coil	0OCT	0Ω	521825				Channel 5
E	VHF Ant. Coil	0OCT	0Ω	521826				Channel 6
F	VHF Ant. Coil	0OCT	0Ω	521827				Channel 7
G	VHF Ant. Coil	0OCT	0Ω	521828				Channel 8
H	VHF Ant. Coil	0OCT	0Ω	521829				Channel 9
I	VHF Ant. Coil	0OCT	0Ω	521830				Channel 10
J	VHF Ant. Coil	0OCT	0Ω	521831				Channel 11
K	VHF Ant. Coil	0OCT	0Ω	521832				Channel 12
L	VHF Ant. Coil	0OCT	0Ω	521833				Channel 13
M	UHF Strip	0Ω		521821				Used in UHF position only
L12	Fil. Choke	0Ω		520518				
L13	Neutr. Coil	0Ω		520701				
L14A	RF, Mixer Grid & Osc. Coils	0Ω		521842				Channel 2
B	RF, Mixer Grid & Osc. Coils	0Ω		521843				Channel 3
C	RF, Mixer Grid & Osc. Coils	0Ω		521844				Channel 4
D	RF, Mixer Grid & Osc. Coils	0Ω		521845				Channel 5
E	RF, Mixer Grid & Osc. Coils	0Ω		521846				Channel 6
F	RF, Mixer Grid & Osc. Coils	0Ω		521847				Channel 7
G	RF, Mixer Grid & Osc. Coils	0Ω		521848				Channel 8
H	RF, Mixer Grid & Osc. Coils	0Ω		521849				Channel 9
I	RF, Mixer Grid & Osc. Coils	0Ω		521850				Channel 10

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: CORONADO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
J	RF, Mixer Grid & Osc. Coils	0Ω		521851				Channel 11
K	RF, Mixer Grid & Osc. Coils	0Ω		521852				Channel 12
L	RF, Mixer Grid & Osc. Coils	0Ω		521853				Channel 13
M	UHF Strip	0Ω		521841				Used in UHF position only; includes resistors & capacitor
L15	Fil. Choke	0Ω		520520				
L16	RF Choke	0Ω		521835				
L17	Feedback Coil	1.4Ω		521834				
L18	Conv. Plate	.1Ω		521836				
L19	1st Video IF Grid	1.3Ω						Includes trap (1.5Ω); Note 4
L20	1st Video IF Plate	1.8Ω						Note 4
L21A	41.25MC Trap	1.5Ω						
B	47.25MC Trap	1.1Ω						Note 4
L22	2nd Video IF Grid	.8Ω						Note 4
L23	3rd Video IF	1.9Ω	1.3Ω					Note 4
L24	4th Video IF	1.6Ω	1.5Ω					Note 4
L25	Series Peak. Coil	8.5Ω		520620	19-3180	TV-184	6180	180 Microhenries
L26	Shunt Peaking Coil	11Ω		520985	19-3660		4650	650 Microhenries
L27	Series Peak. Coil			522020				Note 1
L28	4.5MC Trap	1.7Ω		509603 *	20-1004	TV-151	1470	
L29	Series Peak. Coil	7Ω		520984	19-3160	TV-184	4644	160 Microhenries; Note 2
L30	Shunt Peaking Coil	6.5Ω		520986	19-3660		4650	660 Microhenries; Note 3
L31	Sound IF	1Ω		509378	16-3445 †	TV-113 †	1470-A	
L32	Ratio Det.	3.9Ω	8ΩCT	509706	17-3493	TV-115 ▲	1498	Tertiary winding = .5Ω
L33	Horiz. Osc.	80Ω		520943	20-1402 ■	TV-162 ■	6183 ■	Includes slug; slug Part # 521064; Prl. tapped @ 60Ω, horiz. waveform winding=44Ω

Note 1. Used in chassis when letter "D" is included in series designation.
Note 2. Chassis with letter "H" series designation use series peaking coil (Part # 520689)-180 Microhenries Meissner Part # 19-3180; Merit Part # TV-184 & Miller Part # 6180.
Note 3. Chassis with letter "H" series designation use series peaking coils (Part # 509342)-394 Microhenries Meissner Part # 19-1923; Merit Part #TV-184 Miller part #4648.
Note 4. Used when letter "A" is included in series designation.
* Truetone Part # includes slug & C63; slug Part # 507357.
† Use one winding only.
▲ Use adaptor plate.
■ Reverse coil mounting in coil.

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: CORONADO PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L34	.190ADC	73Ω	2.9 Hy.	508341	C-2326	C-2991 ①		C5030	26C44

① Drill one new mounting hole.

FUSES

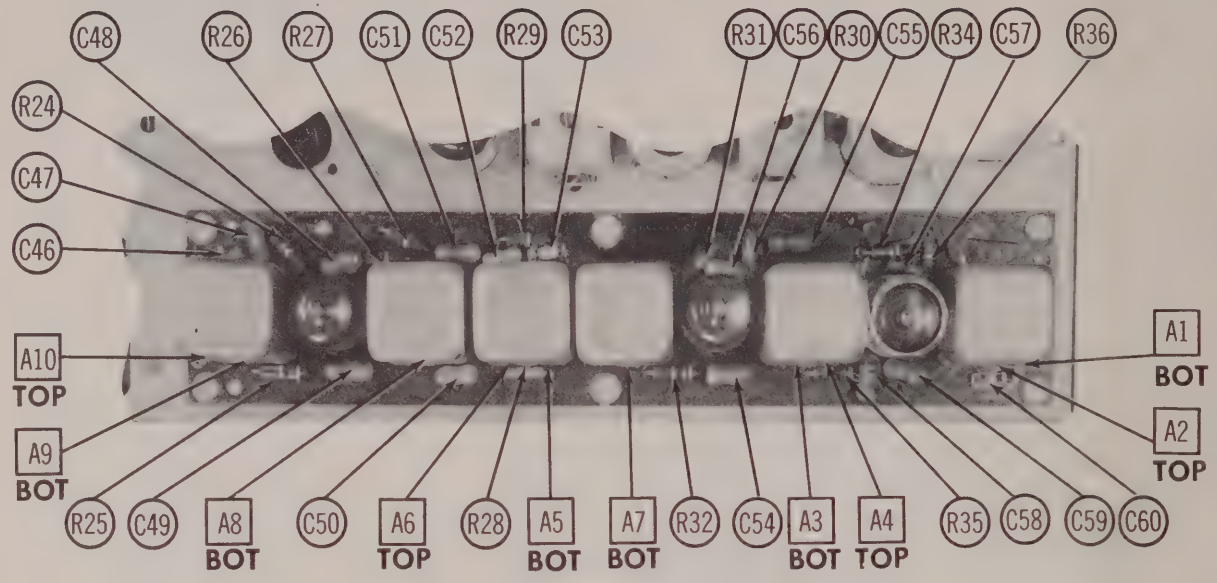
ITEM No.	TYPE	RATING	REPLACEMENT DATA: CORONADO PART No. FUSE	CORONADO PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG S/B	4A 125V	521803	520989	313004. (3AG S/B -4A)	357002	MDX4	4408
M2	3AG	1/4A 250V	508713	520989	312.250 (3AG - 1/4A)	357002	AGC 1/4	4408

CRYSTAL DIODES

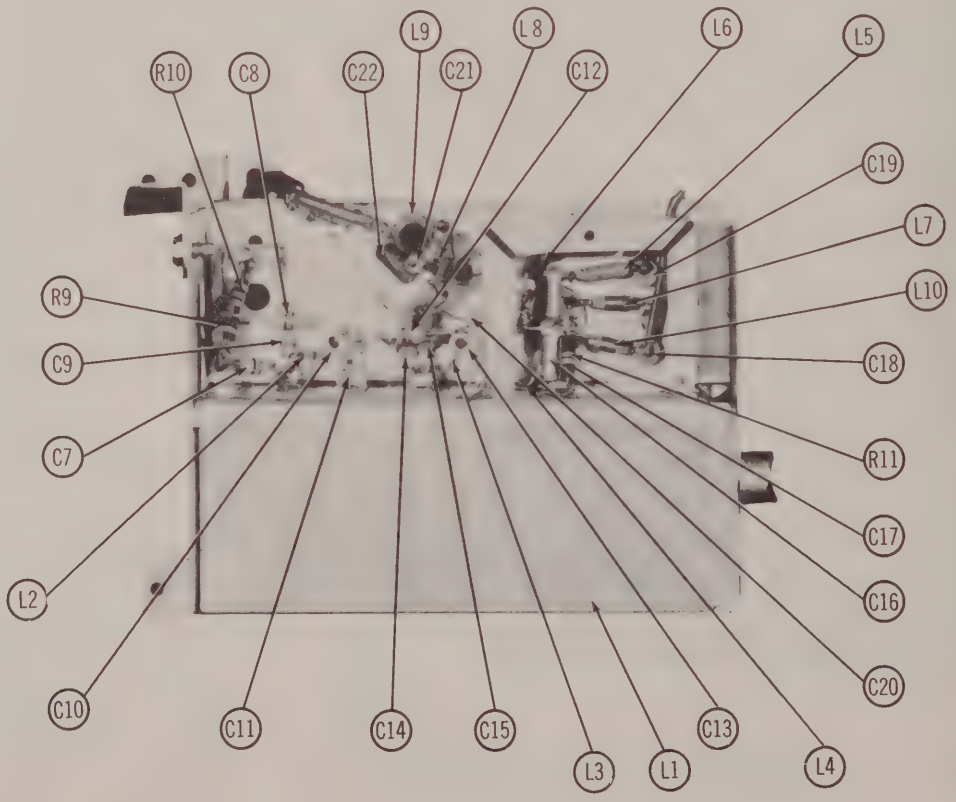
ITEM No.	ORIG. TYPE	REPLACEMENT DATA: CORONADO PART No.	SYLVANIA PART No.	FEDERAL PART No.	NOTES
M3	1N82		1N82 or 1N82A		UHF Mixer
M4	1N64	509386	1N132	1N64A	Video Detector

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M5	Dial Light	118921	#47 Bayonet
M6	Tuner	521187	VHF
M7	Tuner	521170	UHF
M8	Switch	521188	UHF/VHF changeover
M9	Switch	520563	TV-phono
M10	Centering Magnet	521267	Part of yoke cover
M11	Ion Trap	521183	
B3,B4	Trimmer Cap.	W520991	Horiz. locking range of drive (10-160MMF)
	Cabinet	521971	Model 9038A
	Cabinet	521969	Model 9081A
	Knob	521278	Channel Selector
	Knob	521281	Contrast
	Knob	521280	VHF fine tuning / UHF station selector
	Knob	521279	Volume
	Dial	521282	UHF
	Safety Glass	520937	
	Terminal Strip	521095	Deflection yoke connections on vert. output trans.



VIDEO IF ASSEMBLY



UHF TUNER-BOTTOM VIEW

TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

POWER

DEAD SET

If filaments fail to light, check fuse M1, AC interlock assembly, switch on volume control and T1. If filaments light, substitute V19. Check B+ filter and decoupling network components.

SMALL AND/OR DIM PICTURE

Substitute V19. Check B+ filter and decoupling network components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse M2. Check by substitution V15, V16, V17 and V18. Check waveform W16.

If Satisfactory	If Unsatisfactory
Check C110, C105, R105, R106, R100, R101, T3, T5A and other associated circuit components.	Check R94, R98, L33, C102, C103, and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V16, V17, V18 and V19. Check picture tube. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V16, V17, V18 and V19. Check R105, R106, R100, R101, C110, C105, T3, T5A and other associated circuit components.

GENERAL

RASTER SOUND NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER PICTURE NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER NO PICTURE NO SOUND

Check by substitution V2, V3, V4, V5, V6 and V7. Check video detector crystal and assembly. Check video IF and tuner components. In case of UHF, check V1 and associated components.

NO RASTER NO SOUND

Follow procedure outlined under "Dead Set".

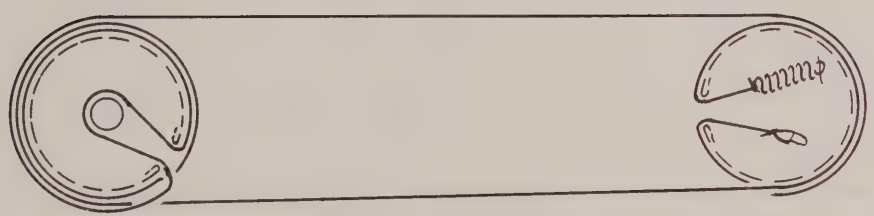
KEYSTONE EFFECT

Check T5, C112, R83 and R84.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



TUNING GANG FULLY COUNTER-CLOCKWISE.

UHF DRIVE CORD STRINGING

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

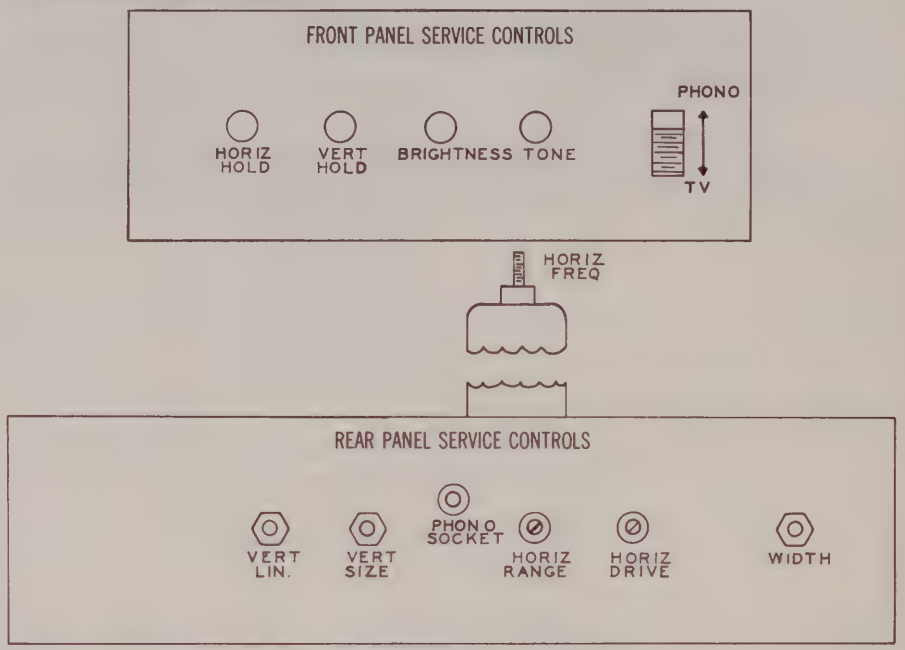
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 3 wood screws holding wood strip at top front of cabinet. Remove wood strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (L33) until picture synchronizes horizontally. (For location see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L32) located on top of chassis. (See tube placement chart).

FUSES

Two fuses are used. One for horizontal sweep circuit protection and one for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

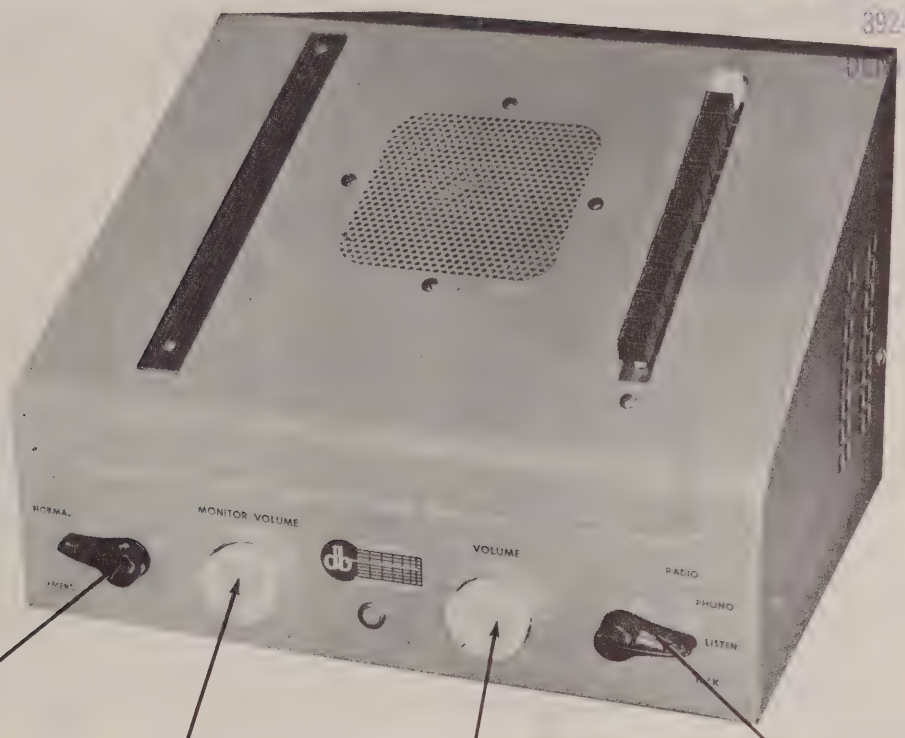
1. Remove 5 push on type control knobs from front panel.
2. Disconnect built-in antenna.
3. Remove 7 wood and 1 metal screws. Remove rear cover.
4. Disconnect speaker leads.
5. Remove 5 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.

PROPERTY OF
E. F. BLANKENSHIP
3824 MEADE ST
DENVER, COLORADO

DAVID BOGEN
MODEL SA10-40

PROPERTY OF
L. F. CANKENSHIP
3924 MIDDL ST.
DENVER, COLORADO

DAVID BOGEN
MODEL SA10-40



NORMAL EMERGENCY SWITCH

ON-OFF MONITOR VOLUME CONTROL

VOLUME CONTROL

RADIO-PHONO LISTEN TALK SWITCH

DAVID BOGEN
MODEL SA10-40

TRADE NAME	David Bogen Model SA10-40
MANUFACTURER	David Bogen Co., Inc., 29 Ninth Ave., New York 14, N.Y.
TYPE SET	AC Operated Intercommunication System Master Unit
TUBES (Four)	Types (2) 6SJ7 AF Amp., 6L6GA Audio Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC-50/60 Cycles RATING .66 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

DAVID BOGEN
MODEL SA10-40

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		David Bogen PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	6SJ7	6SJ7	8N	
V2	AF Amplifier	6SJ7	6SJ7	8N	
V3	Audio Output	6L6GA	6L6GT	7S	
V4	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	David Bogen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	5	450		AFH4-09		D008		WP433.6	R1424	
B	5	450								
C	5	450								
D	5	450								
C2A	5	450		AFH4-09		D008		WP433.6	R1424	
B	5	450								
C	5	450								
D	5	450								
C3	50	50		PRS50/50		BR505		TC39	TVA-1308	
C4	10	25		PRS25/10		BR102		TC22	TVA-1204	
C5	50	50		PRS50/50		BR505		TC39	TVA-1308	
C6	5000	500		1467-005	D6-502	1D5D5	GP2-333-502	MC465	MS-25	
C7	.001	600		P688-001	D6-102	PTE6D1	GP2-333-102	PT621	6TM-P1	
C8	5000	500		1467-005	D6-502	1D5D5	GP2-333-502	MC465	MS-25	
C9	5000	500		1467-005	D6-502	1D5D5	GP2-333-502	MC465	MS-25	
C10	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C11	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C12	5000	500		1467-005	D6-502	1D5D5	GP2-333-502	MC465	MS-25	
C13	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C14	.1	400		P488-1		PTE4P1		PT401	4TM-P1	

CONTROLS

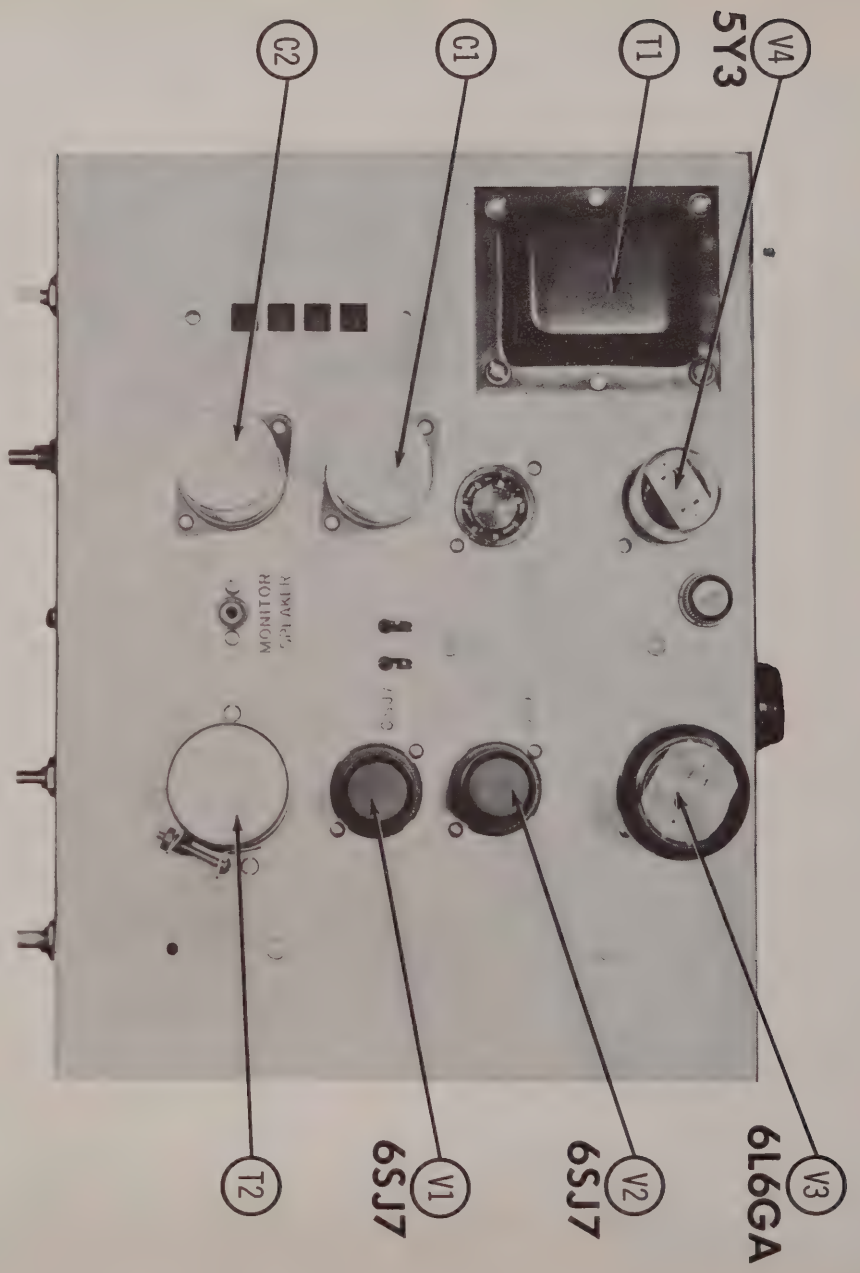
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	David Bogen PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	V-149-A	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	300Ω	2	V-260-A	W-300	A43-300	V-125		Monitor volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.		Attach to R2A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	David Bogen PART No.	IRC PART No.	
R3	100KΩ	½		BTS-100K	
R4	1000Ω	½		BTS-1000	
R5	2. 2Meg	½		BTS-2. 2Meg	
R6	470KΩ	½		BTS-470K	
R7	3300Ω	½		BTS-3300	
R8	750Ω	½		BTS-750	
R9	47KΩ	½		BTS-47K	
R10	2. 2Meg	½		BTS-2. 2Meg	
R11	470KΩ	½		BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	David Bogen PART No.	IRC PART No.	
R12	75KΩ	½		BTS-75K	
R13	250Ω	4		PW4-250	
R14	47Ω	½		BTS-47	
R15	250Ω	4		PW4-250	
R16	4700Ω	2		BTB-4700	
R17	22KΩ	½		BTS-22K	
R18	40KΩ	8			
R19	47Ω	½		BTS-47	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	David Bogen PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC ③ .66A	690VCT .097ADC	5VAC ③ 2A	6.3VCT ③ 2A		PM-8409②	P2953 ②	R-14B①②		

① Drill new mounting holes.
② File out cutout, and remove lower shell.

TRANSFORMER (INPUT)

ITEM No.	RATING				REPLACEMENT DATA					
	Pri. #1	Pri. #2	Sec. #1		David Bogen PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T2	1.1Ω	16Ω	345Ω				P-2953 ①			
	Turns ratio Pri. #1 32 to 1									

① Remove lower shield.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	David Bogen PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T3	4.2KΩ	50Ω Each Half							

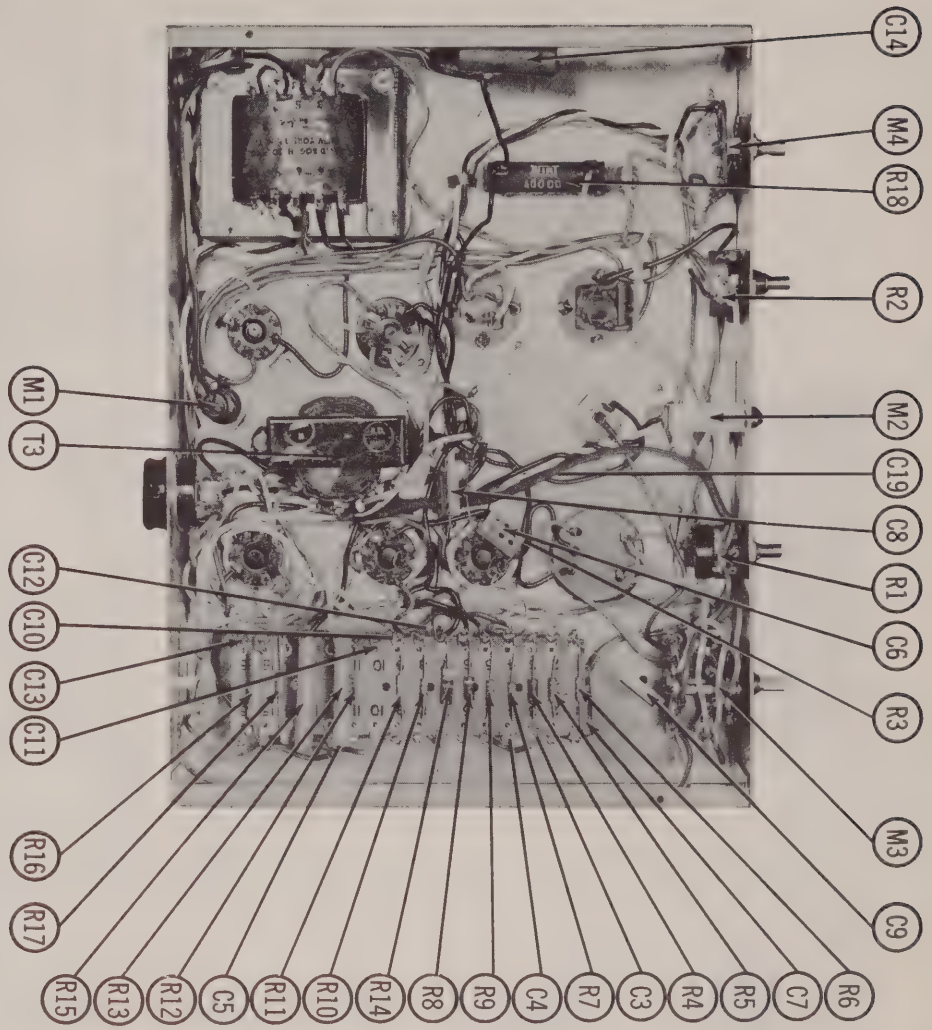
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			David Bogen PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1.5A			31201.5 (3AG-1½A)	342001	AGC 1½	HCM

MISCELLANEOUS

ITEM No.	PART NAME	David Bogen PART No.	NOTES
M2	Dial light		# 47bayonet
M3	Switch		Function selector (radio-phono-talk-listen)
M4	Switch		Normal-energency

CHASSIS—BOTTOM VIEW



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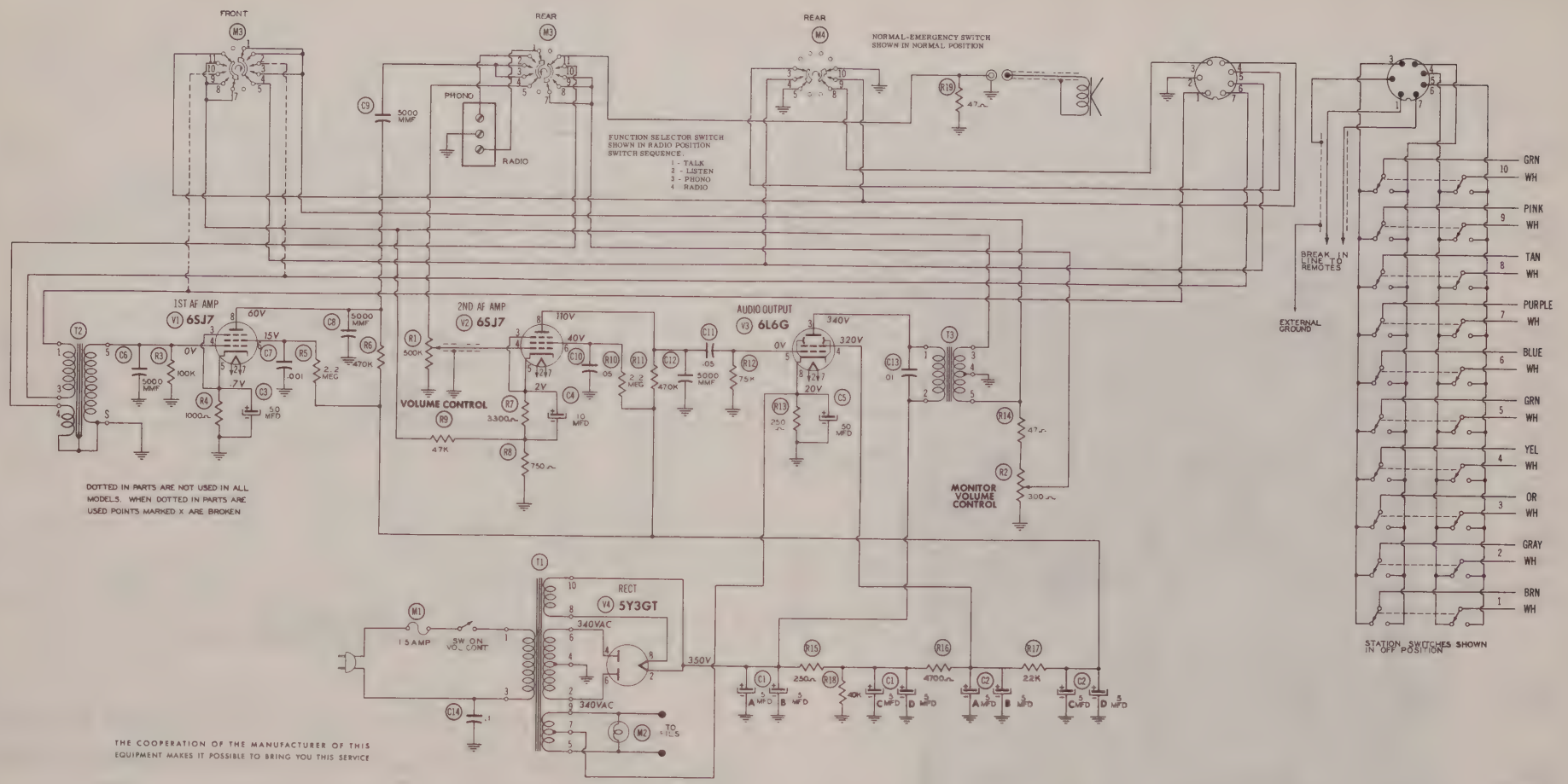
DENVER, COLORADO

DAVID BOGEN
MODEL SA10-40

DAVID BOGEN
MODEL SA10-40



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0Ω	250Ω	1MΩ	100KΩ	1MΩ	†3.2Meg	250Ω	†500KΩ
V 2	6SJ7	0Ω	250Ω	4MΩ	500KΩ	4MΩ	†3.2Meg	250Ω	†500KΩ
V 3	6L6GA	0Ω	250Ω	†125	†5KΩ	75KΩ	INF	250Ω	250Ω
V 4	5Y3	INF	40KΩ	INF	170Ω	INF	180Ω	INF	40KΩ

VOLTAGES TAKEN IN RADIO-NORMAL POSITION
† MEASURED FROM PIN 7 OF V4

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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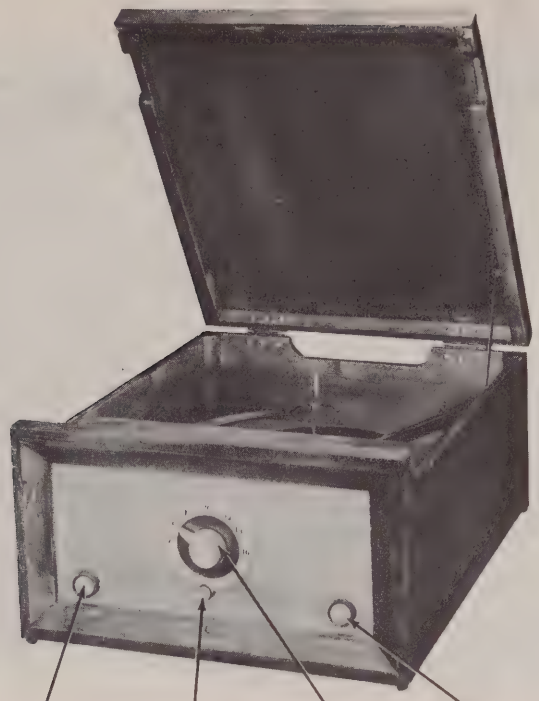
EMERSON
MODEL 783-B (Ch. 120200B)



EMERSON
MODEL 783-B (Ch. 120200B)

TRADE NAME	Emerson Model 783-B (Ch. 120200B)
MANUFACTURER	Emerson Radio & Phono Corp., 111 Eighth Ave., New York, N.Y.
TYPE SET	AC Operated AM Radio-Phono Combination Superheterodyne Receiver With 3 Speed Automatic Record Changer
TUBES	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - EMERSON MODEL 819072 - SEE SIMILAR V-M MODEL 950- PHOTOFACT SET 216 - FOLDER 11 OR RECORD CHANGER MANUAL CM-5.

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PARTS LIST AND DESCRIPTIONS

EMERSON
MODEL 783-B (Ch. 120200B)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	30	150	925218	PRS150/50-30		BBRD5315		TCD497	TVA-2450	Red Green
B	50	150								
C2	.05	400	923554	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C3A	220									
B	2000									
C	250		♦923024	♦PA-113-1	♦PC-151	♦116TM1	♦1408-02		♦DT-2	
D										
E	5000									
C4	.002	600	923723	P688-002	D6-202	CUB6D2	GP2L-202	PT622	6TM-D2	
C5	.02	400	923524	P488-02		CUB4S2		PT412	4TM-S2	
C6	.05	400	923554	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C7	.05	400	923554	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C8	.05	400	923554	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C9	.1	400	923515	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C10	6.8			SI6.8NP0	TCZ-6.8	TZ08	NP0K-6R8	ZT-5568	5TCCB-V68	

♦ Items C3A, C3B, C3C, C3D, C3E, R6A, R6B and R6C are combined in one unit.
When replacing items individually items C3C and C3D should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2 Meg	½	390238		A47-2Meg-Z	AB-76	U-55	Volume
B	Shaft		Not Req.		KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.		SWE-12	KB-1	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	NOTES
R2	22KΩ	½		BTS-22K	
R3	120Ω	½	340272	BTS-120	
R4	3.3Meg	½	351332	BTS-3.3Meg	
R5	680KΩ	½	351172	BTS-680K	
R6A	6.8Meg	½		BTS-6.8Meg	
B	470KΩ	½	♦ 923024	BTS-470K	
C	470KΩ	½		BTS-470K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	NOTES
R7	22KΩ	½	350812	BTS-22K	
R8	150Ω	½	340292	BTS-150	
R9	1500Ω	1		BTA-1500	
R10	18Ω	½		BTS-18	

♦ Items R6A, R6B, R6C, C3A, C3B, C3C, C3D, C3E are combined in one unit.

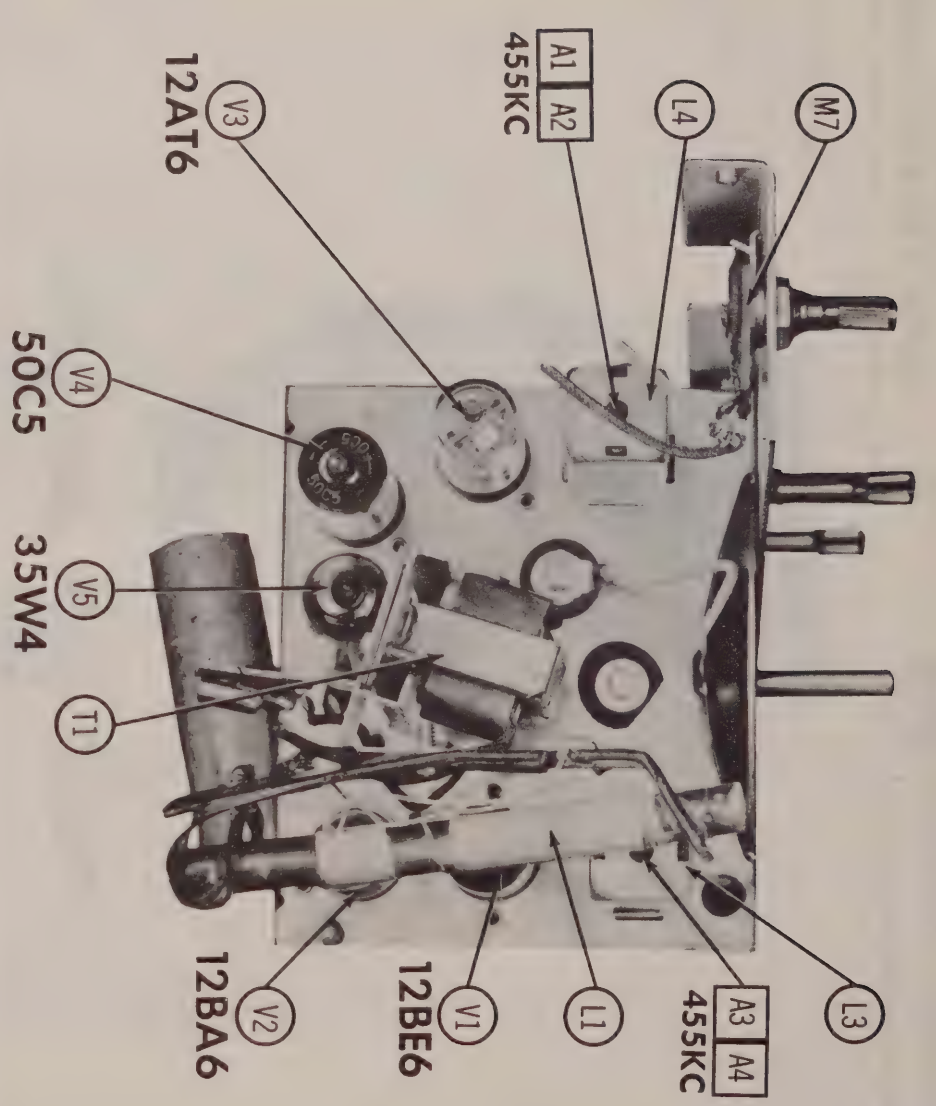
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: EMERSON PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.3KΩ	3.2Ω	734079	A-3332	A-3025	S-12X	Z1101		

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: EMERSON PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3.2Ω	180111	ST-113 Mod. P4-X	4A07	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coil	0Ω	. 6Ω	700089				
L2	Osc. Coil	. 6Ω	6. 8Ω	716071	14-1073		69-Osc. †	
L3	Input Coil	17Ω	17Ω	720033	16-6758	BC-352	12-C1	
L4	Output IF	17Ω	17Ω	720033	16-6758	BC-353	12-C2	

† Drill mounting hole.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA EMERSON PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1	960776	AC-DC	A-1 A-3	WC24	A53MG A52A	46	O-1 O-3	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

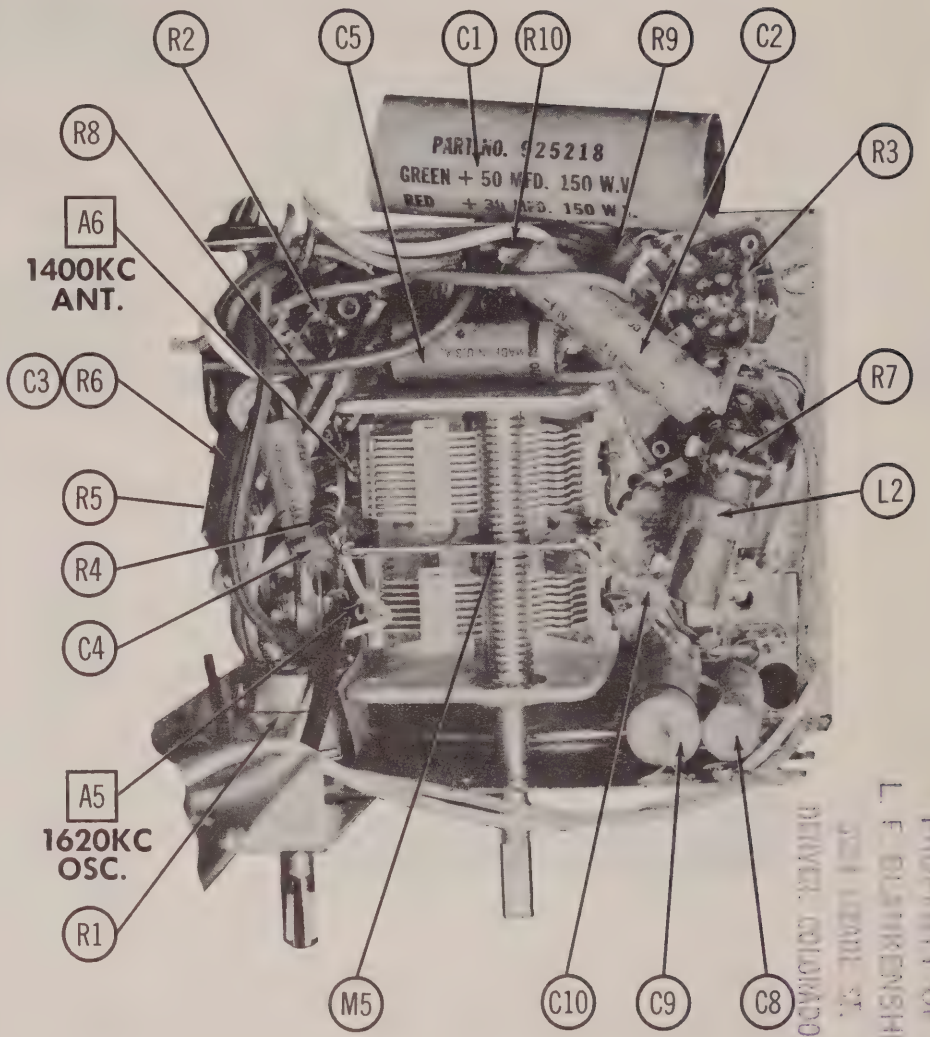
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA EMERSON PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M2	960777 78RPM-Needle	*JP-32 or † JPS-32	*C-414 or †C-420 or ♦C-420D	*W-31A or †W-31S	* Metal † Jewel ♦ Diamond
M3	960778 33 1/3-45RPM Needle	*JP-32LP or †JPS-32LP	*A-415 or †A-418 or ♦A-418D	*W-31MGA or † W-31MGS	

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M4	Dial light	807000	# 47 bayonet
M5	Tuning cap	900107	(25-355MMF, 40-165MMF)
M6	Switch	510097	Radio-phono
M7	Switch	510098	Tone
	Cabinet	140542	
	Knob	460312B	Tuning
	Knob	460377A	Volume
	Knob	460162A	(2) radio-phono & tone
	Record changer	819072	Complete 3 - speed

CHASSIS—BOTTOM VIEW



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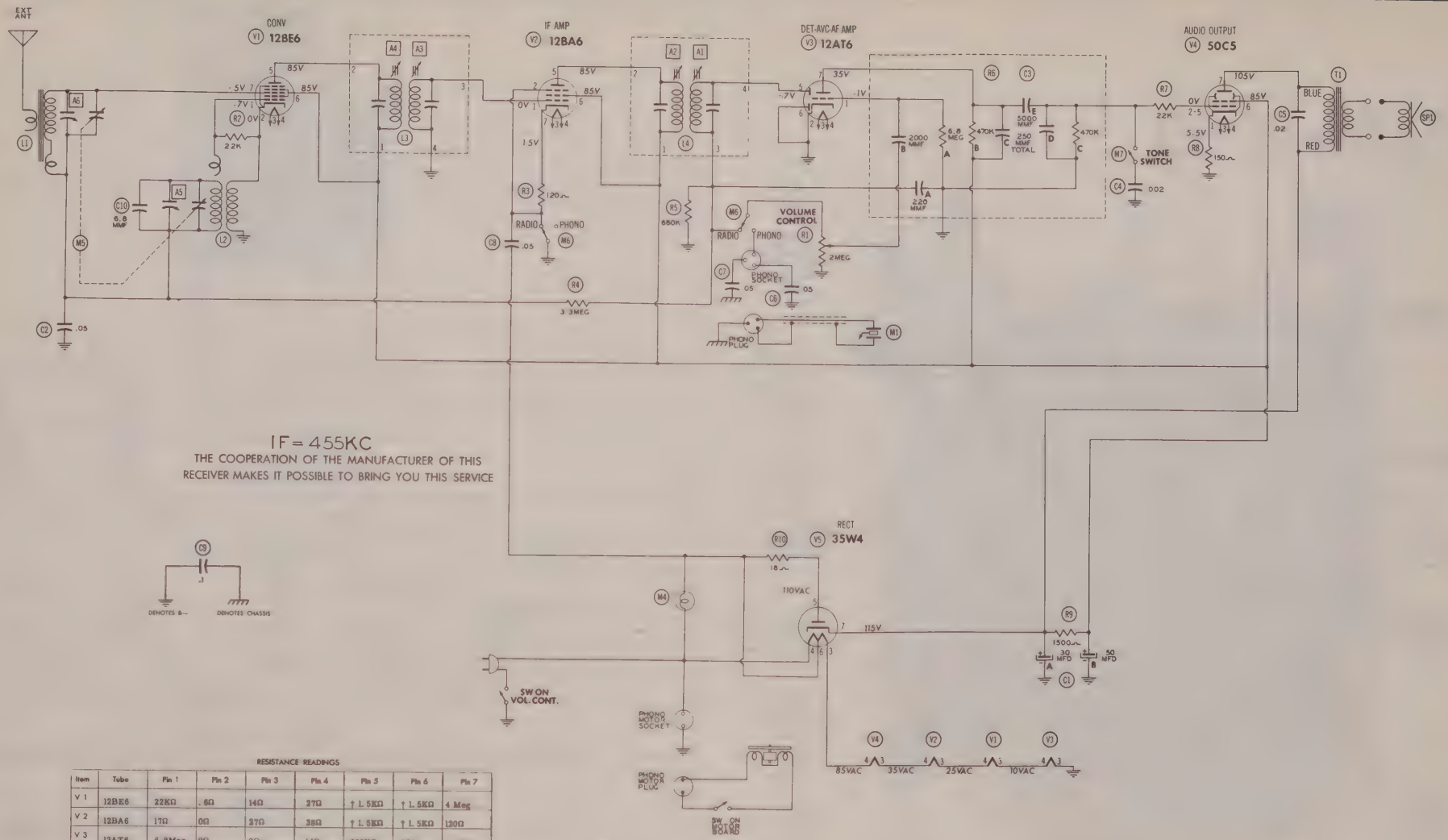
EMERSON
MODEL 783-B (Ch. 120200B)



IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	14Ω	27Ω	↑ 1.5KΩ	↑ 1.5KΩ	4 Meg
V 2	12BA6	17Ω	0Ω	37Ω	38Ω	↑ 1.5KΩ	↑ 1.5KΩ	130Ω
V 3	12AT6	6.8Meg	0Ω	0Ω	14Ω	680KΩ	0Ω	↑ 470KΩ
V 4	50C5	150Ω	490KΩ	38Ω	92Ω	470KΩ	↑1.5KΩ	↑ 195Ω
V 5	35W4	INF.	INF.	90Ω	124Ω	138Ω	120Ω	100KΩ

↑ MEASURED FROM PIN 7 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Measurements may not present values to expect, possible a variance of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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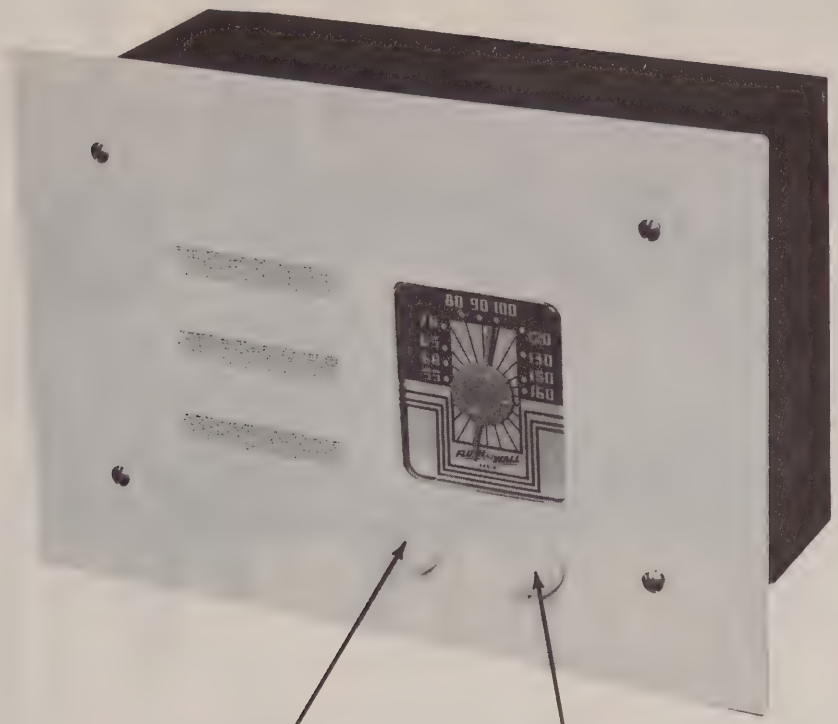
FLUSH-WALL
MODEL 5P (Revised)



FLUSH-WALL
MODEL 5P (Revised)

TRADE NAME	Flush-Wall Model 5P (Revised)
MANUFACTURER	Flush-Wall Radio Mfg., 1012 Cleveland St., Clearwater, Fla.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver for Custom Installation
TUBES (Five)	Types 12SA7 Conv., 12SK7 IF Amp., 12SQ7 Det.-AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .23 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	530-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna stator lug on tuning gang. Low side to B-.	455KC (400%Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	200MMF	High side to external antenna lead. Low side to B-.	1500KC	1500KC	"	A5	Adjust for maximum output.
3.	"	"	1400KC	Tune to 1400KC signal	"	A6	"

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PARTS LIST AND DESCRIPTIONS

FLUSH-WALL MODEL 5P

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: FLUSH-WALL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amplifier	12SK7	12SK7	8N	
V3	Det-AVC-AF Amp.	12SQ7	12SQ7	8Q	
V4	Audio Output	50L6GT	50L6GT	7S	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FLUSH-WALL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	40	150		PRS150/40-40		BBRD4415		TCD48	TVA-2445	Red
B	40	150								
C2	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C3	250			SI250	D6-251	TP40	GP1K-251	UC-5325	5GA-T25	
C4	250			SI250	D6-251	TP40	GP1K-251	UC-5325	5GA-T25	
C5	.005	400		P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C6	250			SI250	D6-251	TP40	GP1K-251	UC-5325	5GA-T25	
C7	.02	400		P488-02	DF-203	CUB4S2		PT412	4TM-S2	
C8	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C9	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C10	.22	200		P288-22		PJ2P22		PT4022	2TM-P22	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FLUSH-WALL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	VC17014	Q13-137	A47-1Meg-Z	B-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A

RESISTORS

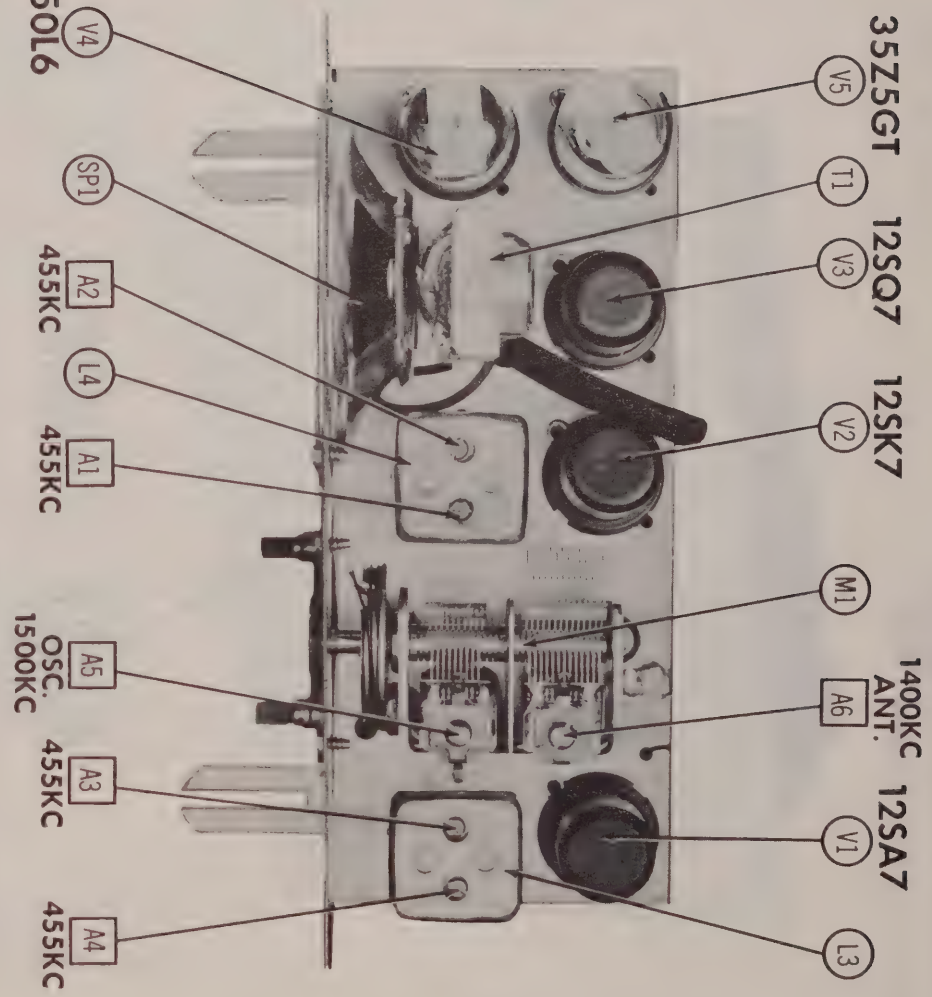
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FLUSH-WALL PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	22KΩ	½		BTS-22K	
R3	2. 2Meg	½		BTS-2. 2Meg	
R4	10 Meg	½		BTS-10 Meg	
R5	470KΩ	½		BTS-470K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FLUSH-WALL PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R6	470KΩ	½		BTS-470K	
R7	150Ω	½		BTS-150	
R8	1200Ω	1		BTA-1200	
R9	220KΩ	½		BTS-220K	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: FLUSH-WALL PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2. 3KΩ	3. 5Ω	902467-3	A-3332 ①	A-3025 ①	S-12X ①	Z1101 ①	24S50 ①	① Bend mounting tabs down. File out slots. Mount on original mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	FLUSH-WALL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.5Ω	RL-108E-14	ST-113 Mod. P4-X	4A07	

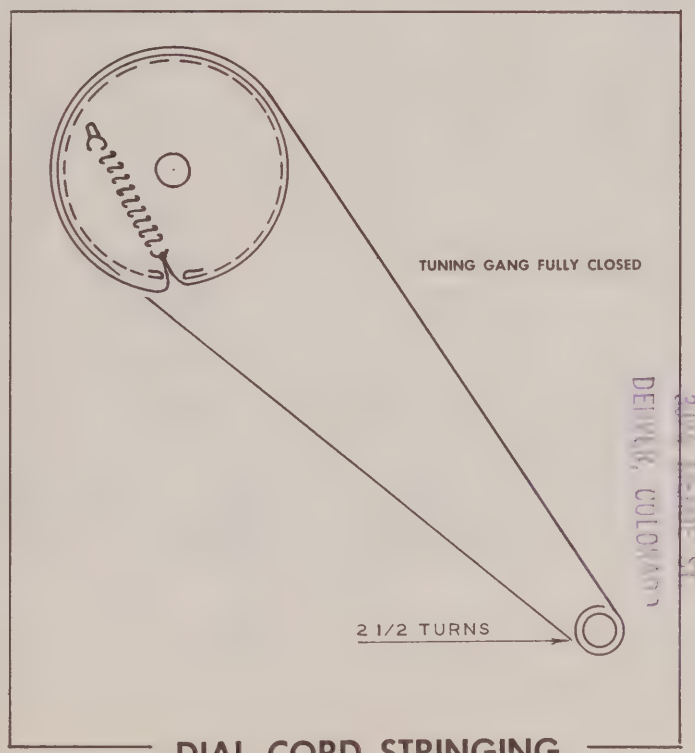
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	FLUSH-WALL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	38Ω	6.5Ω		14-1026 *	BC-380 *	72-A	
L2	Osc. Coil	.6Ω	5.5Ω		14-1073		69-Osc.	
L3	Input IF	19Ω	19Ω		16-6658	BC-368 *	312-C1	
L4	Output IF	19Ω	19Ω		16-6660	BC-371 *	312-C4	

* Drill mounting hole.

MISCELLANEOUS

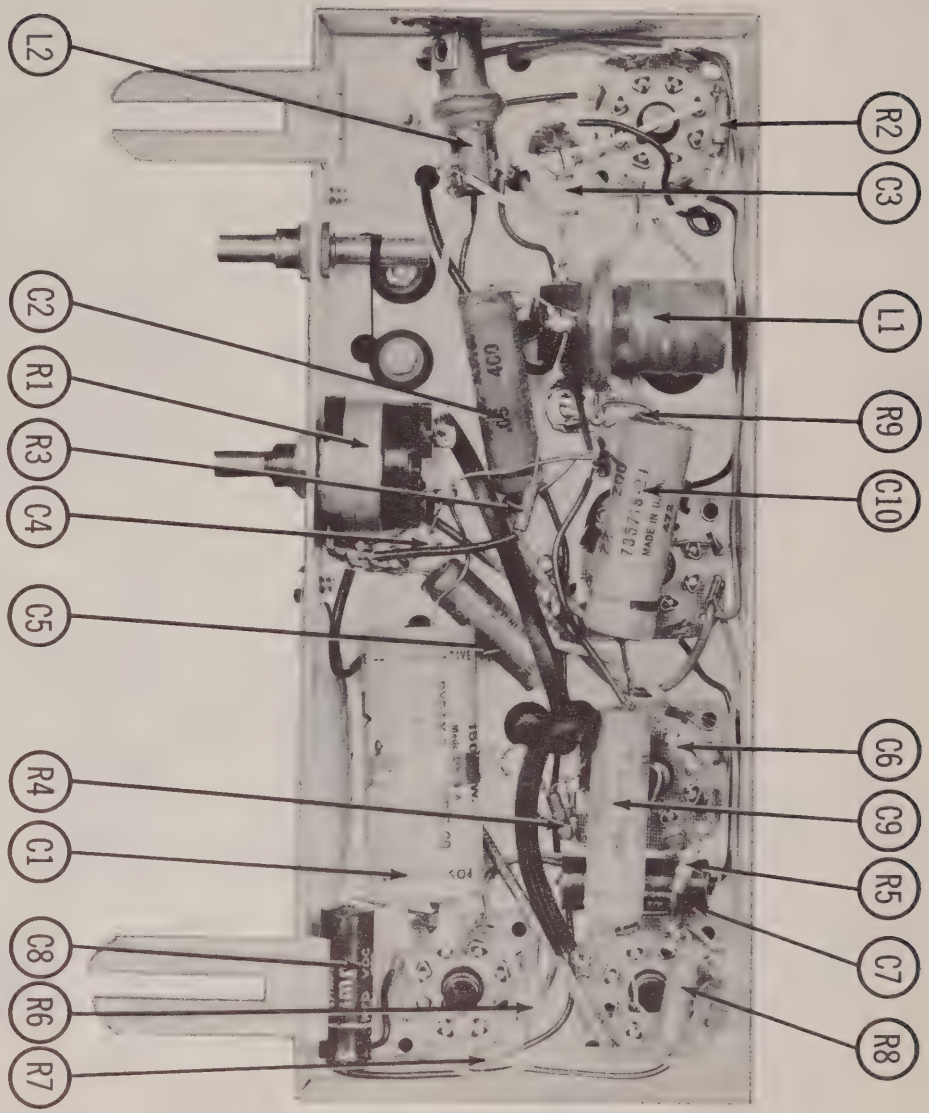
ITEM No.	PART NAME	FLUSH-WALL PART No.	NOTES
M1	Tuning cap.	191304	23-520MMF, 31-193MMF

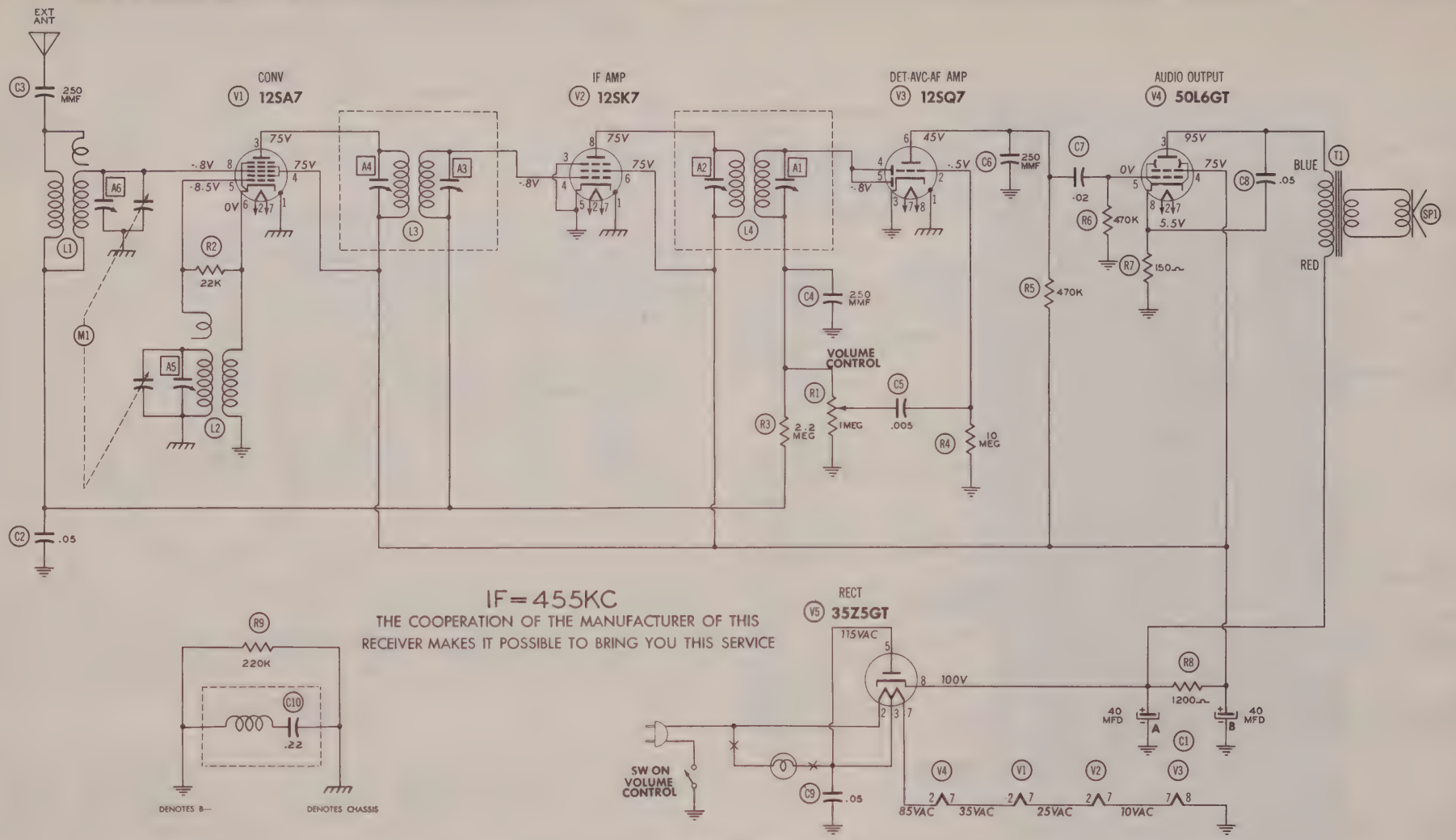


DIAL CORD STRINGING

PROPERTY OF
L. F. ELANKENSHIP
DENVER, COLORADO

CHASSIS—BOTTOM VIEW





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	230KΩ	40Ω	†1.2KΩ	†1.2KΩ	22KΩ	.6Ω	28Ω	3.2Meg
V 2	12SK7	230KΩ	28Ω	0Ω	3.2Meg	0Ω	†1.2KΩ	14Ω	†1.2KΩ
V 3	12SQ7	220KΩ	10 Meg	0Ω	1Meg	1 Meg	†471KΩ	14Ω	0Ω
V 4	50L6GT	INF.	95Ω	†300Ω	†1.2KΩ	470KΩ	0Ω	40Ω	150Ω
V 5	35Z5GT	INF.	130Ω	135Ω	†1.2KΩ	135Ω	INF.	95Ω	90KΩ

† MEASURED FROM PIN 8 OF V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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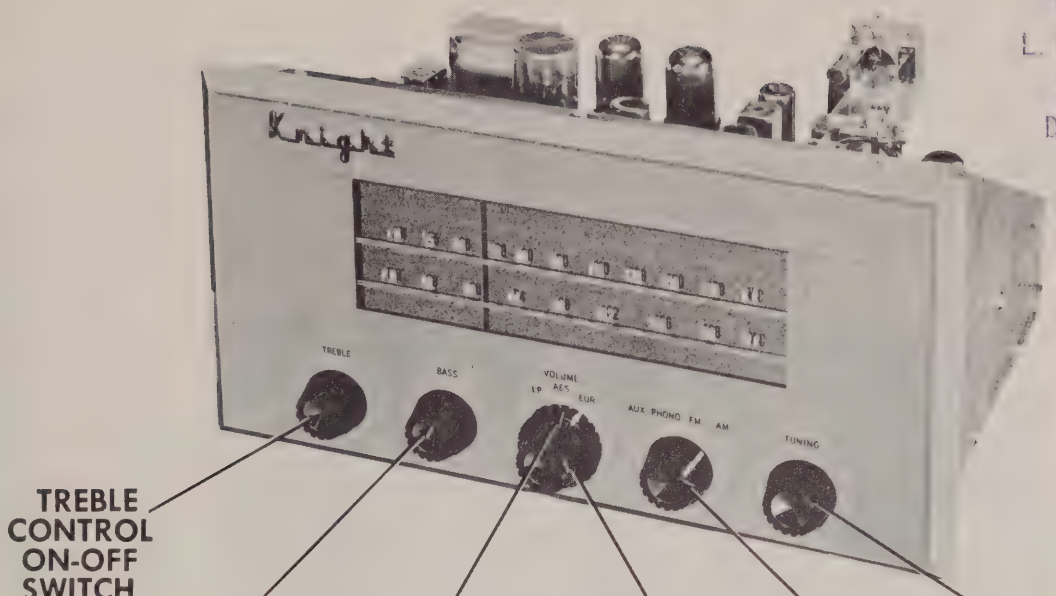


TREBLE CONTROL ON-OFF SWITCH

BASS CONTROL

RECORD COMPENSATION SWITCH

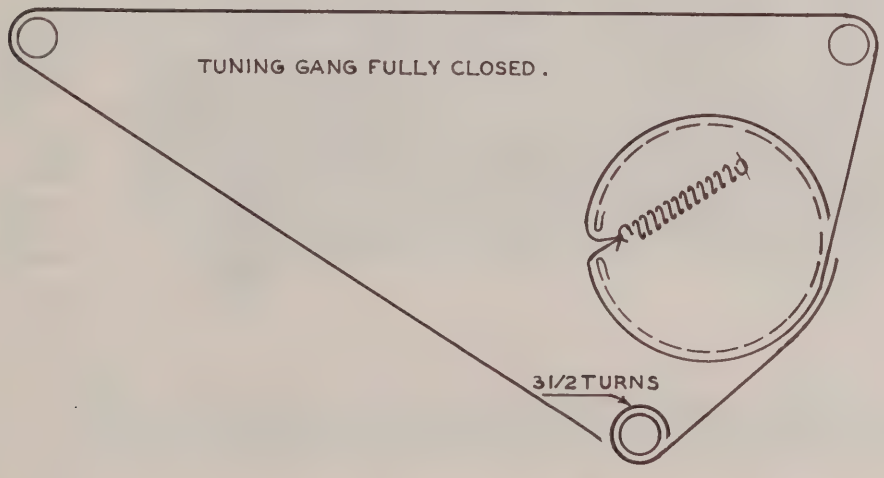
VOLUME CONTROL

FUNCTION SELECTOR SWITCH

TUNING CONTROL

KNIGHT
MODEL SX14L721

TRADE NAME	Knight Model SX14L721	
SUPPLIER	Allied Radio Corp., 100 North Western Ave., Chicago 80, Ill.	
TYPE SET	AC Operated AM-FM Superheterodyne Receiver For Custom Installation	
TUBES	Fourteen	
POWER SUPPLY	110-120 Volts AC- 50/60 Cycles	RATING .78 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	535-1720KC	FREQ. MOD. 88-108MC



DRIVE CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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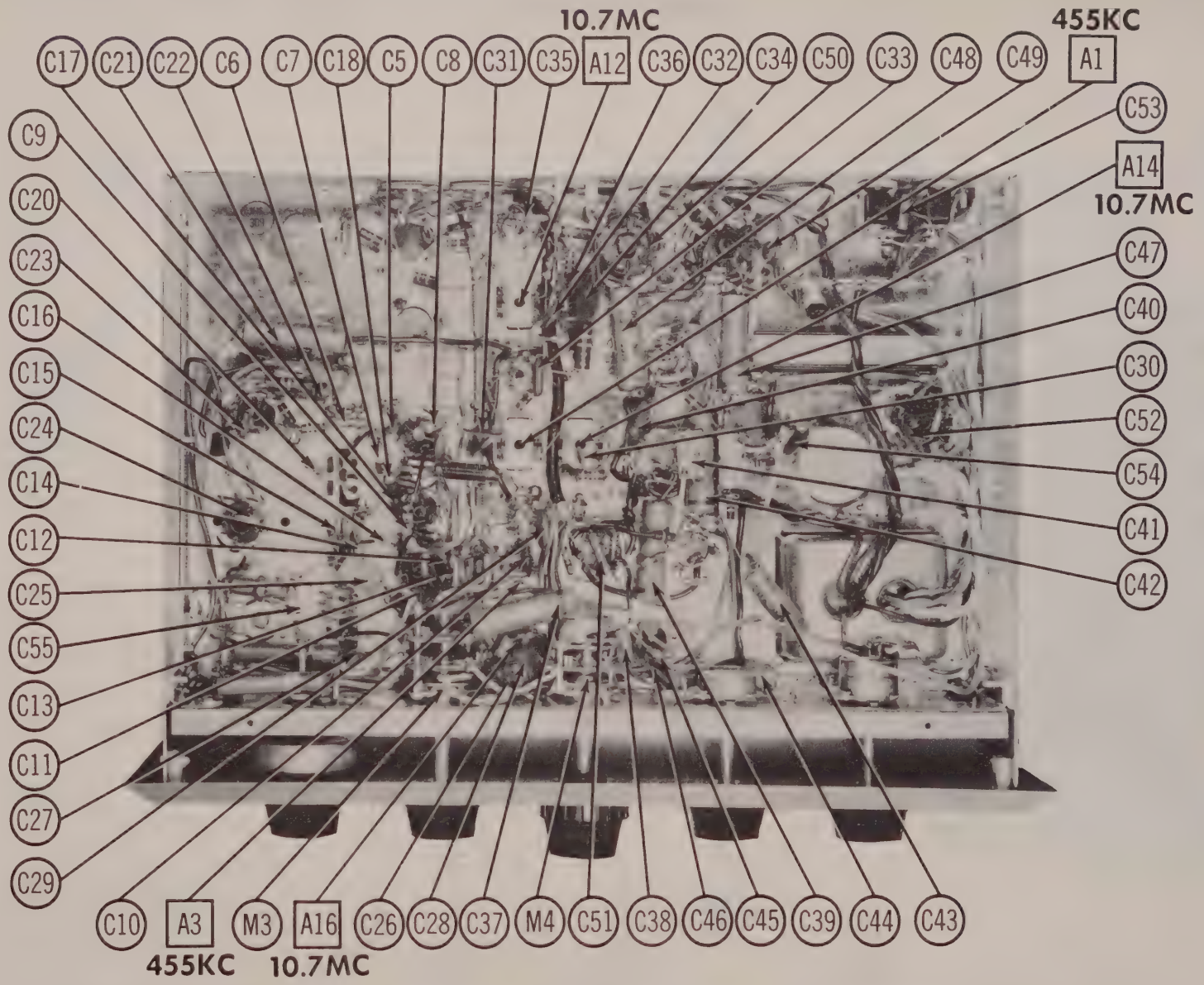
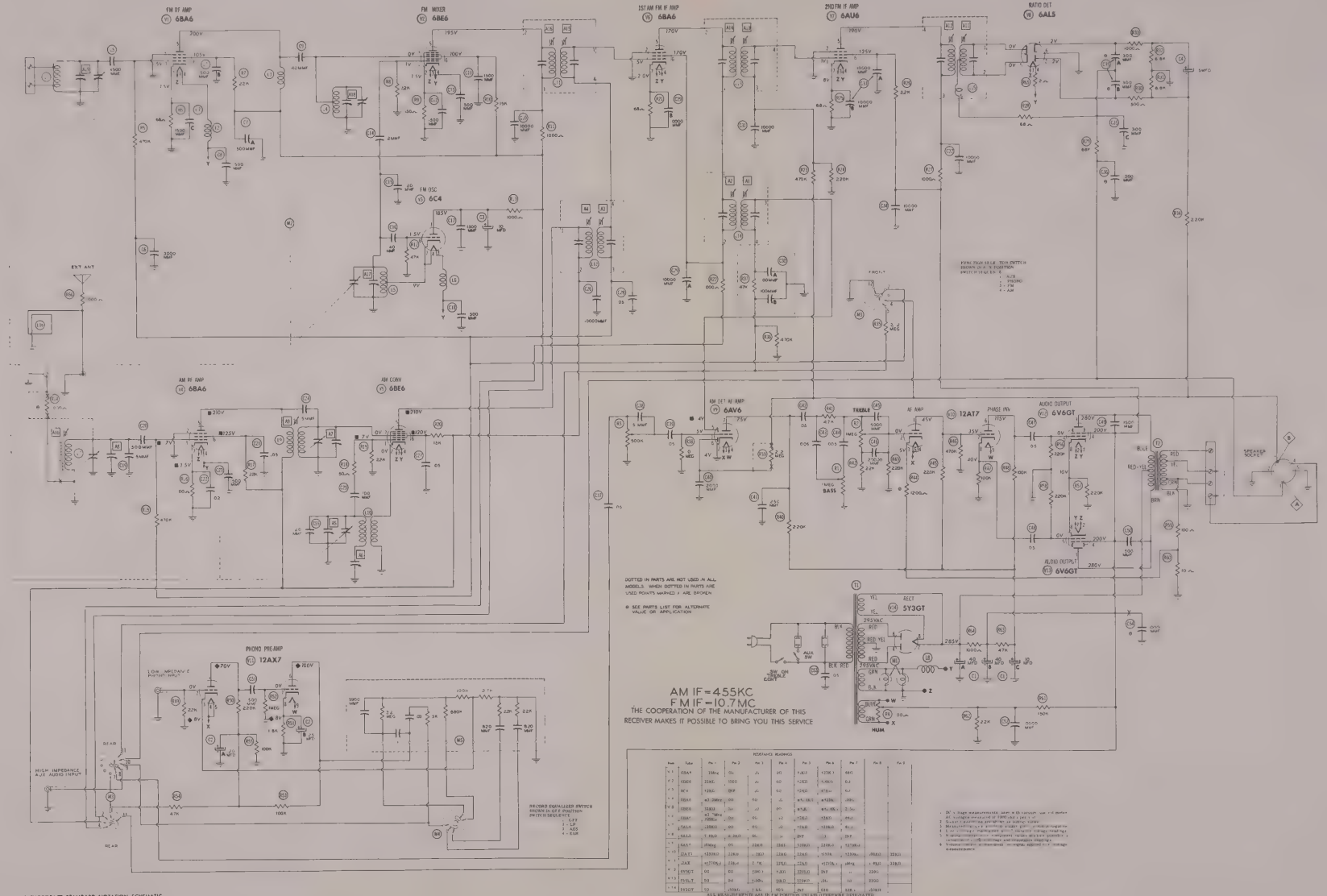


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION


FM RF AMP V1 6BA6
FM MIXER V2 6BE6
FM OSC V3 6C4
1ST AM FM IF AMP V5 6BA6
2ND FM IF AMP V7 6AU6
RATIO DET V8 6AL5
EXT ANT
AM RF AMP V4 6BA6
AM CONV V6 6BE6
AM DET AF AMP V9 6AV6
TREBLE
BASS
AF AMP
12AT7
PHASE INV
AUDIO OUTPUT V12 6V6GT
AUDIO OUTPUT V13 6V6GT
SPEAKER
RECT V14 5Y3GT
PHONO PRE-AMP V11 12AX7
LOW IMPEDANCE PHONO INPUT
HIGH IMPEDANCE AUX AUDIO INPUT
REAR
RECORD EQUALIZER SWITCH SHOWN IN OFF POSITION
SWITCH SEQUENCE
1 - OFF
2 - LP
3 - RIAA
4 - AUX
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED # ARE BROKEN
@ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
AM IF = 455KC
FM IF = 10.7MC
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
HUM
RESISTANCE READINGS
ALL MEASUREMENTS ARE IN FM POSITION UNLESS OTHERWISE DESIGNATED
* MEASURED IN AM FUNCTION
† MEASURED BY PHONO POSITION
‡ MEASURED FROM PIN 7 TO 8

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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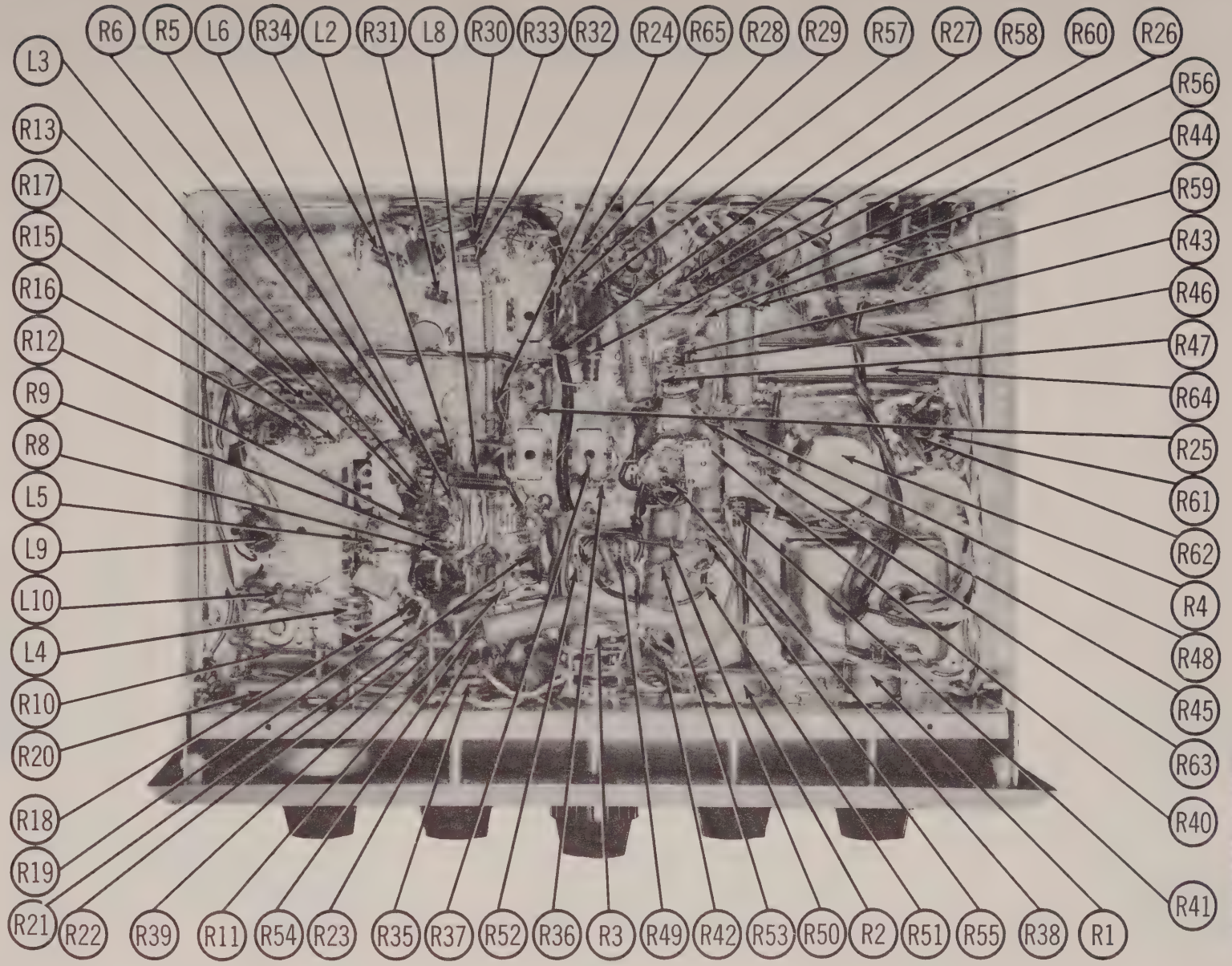


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
L. F. SLANKENSHIP
DENVER, COLORADO

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning gang fully closed set the dial pointer to the small index mark (gold mark) just to the left of "55" on the dial.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Set treble and bass controls fully clockwise.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

AM ALIGNMENT

Attenuate generator output to maintain 0.5 watt output meter indication. 0.5 watt is approximately 1.4 volts deflection across a 4Ω voice coil and 2 volts across the 8Ω voice coil.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (grid) of 6BA6 (V6). Low side to chassis.	455KC (400~Mod)	AM	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output.
2.	"	High side to pin 7 (grid) of 6BE6 (V5). Low side to chassis.	"	"	"	"	A3, A4	"
3.	5MMF	High side thru 5MMF to AM antenna socket. Low side to chassis.	1700KC	"	1700KC	"	A5	"
4.	"	"	550KC	"	550KC	"	A6	Adjust for maximum output. Repeat steps 3 and 4 until proper oscillator tracking is obtained.
5.	"	"	1550KC	"	1550KC (Small index mark just to right of "150" on dial)	"	A7, A8	Adjust for maximum output.
6.	"	"	600KC	"	600KC	"	A9, A10	Adjust for maximum output. Repeat steps 5 and 6 until proper RF tracking is obtained.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (grid) of 6AU6 (V7). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
8.	"	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A12	Adjust for maximum deflection. Repeat steps 7 and 8.
9.	"	High side to pin 1 (grid) of 6BA6 (V6). Low side to chassis.	"	"	"	"	A13, A14	Adjust for maximum deflection. Attenuate generator output to maintain not more than -1.5 volts at VTVM.
10.	"	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	"	"	"	"	A15, A16	Adjust for maximum deflection. Repeat steps 9 and 10.

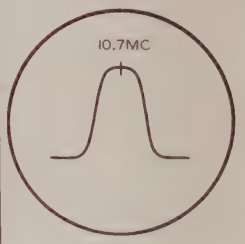


FIG. 1

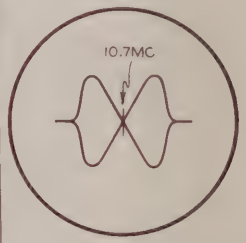


FIG. 2

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.
Use only enough generator output to provide useable pattern on scope.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (grid) of 6BA6 (V6). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓑ. Low side to chassis.	A12, A13, A14	Disconnect stabilizing capacitor C4. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
8.	"	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	"	"	"	"	A15, A16	"
9.	"	"	"	"	"	Vert. Amp. to point Ⓐ. Low side to chassis.	A11	Reconnect stabilizing capacitor C4. Adjust so that 10.7MC occurs at center of cross-over lines as in Fig. 2. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines. Continue alignment with step 11.

FM RF ALIGNMENT

Attenuate generator output to maintain -1.5 volts on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.	270Ω Carbon Resistor	High side thru 270Ω to FM antenna receptacle. Low side to chassis.	108MC (Unmod)	FM	108MC	DC probe to point Ⓑ. Common to chassis.	A17	Adjust for maximum deflection.
12.	"	"	88MC	"	88MC	"		Use tuning wand. If necessary, compress or expand L5 for maximum deflection. Repeat steps 11 and 12 until proper oscillator tracking is obtained.
13.	"	"	106MC	"	106MC	"	A18, A19	Adjust for maximum deflection.
14.	"	"	90MC	"	90MC	"		Check L4 and L1 with tuning wand. If necessary compress or expand coil turns for maximum deflection. If necessary, repeat steps 13 and 14 until proper RF tracking is obtained.

HUM BALANCE ADJUSTMENT

If it becomes necessary to readjust the hum balance control (R4A) allow a 10 minute warm-up period with record player disconnected and perform the following operations:

a. Set function switch to "Phono" position.
b. Set record equalizer to "AES" position
c. Turn volume control fully clockwise.
d. Reverse line plug in AC outlet and leave in that position which gives least residual hum.
e. Adjust R4A for MINIMUM background noise residual hum.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

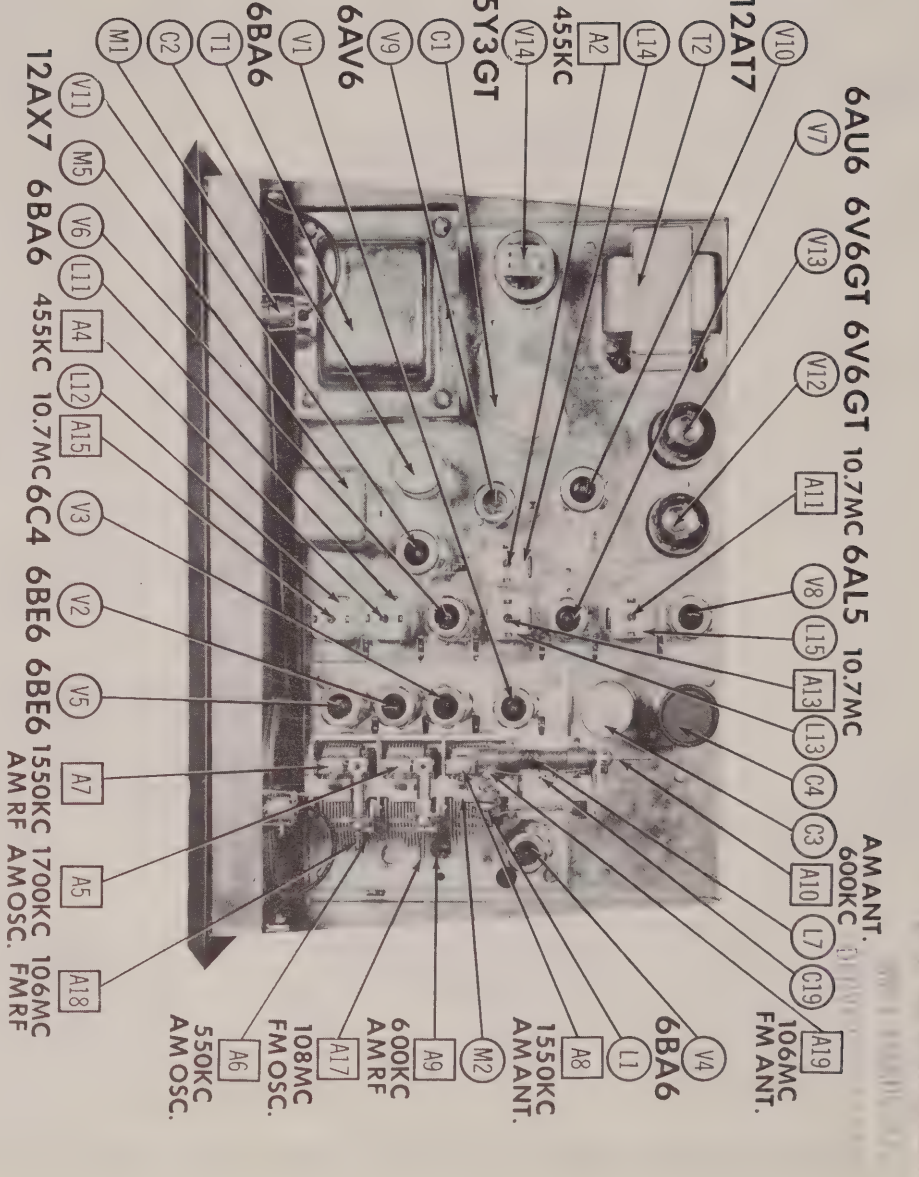
ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		KNIGHT PART No.	STANDARD REPLACEMENT		
V1	FM RF Amplifier	6BA6	6BA6	7BK	
V2	FM Mixer	6BE6	6BE6	7CH	
V3	FM Oscillator	6C4	6C4	6BG	
V4	AM RF Amplifier	6BA6	6BA6	7BK	
V5	AM Converter	6BE6	6BE6	7CH	
V6	1st. AM FM IF Amp	6BA6	6BA6	7BK	
V7	2nd. FM IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector	6AL5	6AL5	6BT	
V9	AM Det. AF Amp.	6AV6	6AV6	7BT	
V10	AF Amp. Phase Inverter	12AT7	12AT7	9A	
V11	Phono Pre-Amp.	12AX7	12AX7	9A	
V12	Audio Output	6V6GT	6V6GT	7S	
V13	Audio Output	6V6GT	6V6GT	7S	
V14	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	450		AFH3-43		C034		FP376.8	TVL-3785	
B	■40	450								
C	▲10	450								
C2A	▲20	450		AFH3-136		B040		FP234	TVL-3749	
B	■25	50						TC30		
C3	10	450		AFH1-48		A043		FP231	TVL-1705	
C4	5	250		PRS250/4		BR425		TC50X	TVA-1501	
C5	1500			SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
C6	3000			SI3000	D6-302		GP2-333-302	UC-523	5GA-D3	
C7A	1500			SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
B	1500			SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	Note 1
C C	1500			SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
C8	500			SI500	D6-501	TP47	GP2K-501	UC-535	5GA-T5	
C9	40									
C10	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C11	1500			SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
C12	1500			SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
C13	500			SI500	D6-501	TP47	GP2K-501	UC-535	5GA-T5	
C14	2									
C15	20			SI20NP0	TCZ-20	TZ13	NP0K-200	ZT-542	5TCC-Q2	
C16	40									
C17	1500			SI1500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	
C18	500			SI500	D6-501	TP47	GP2K-501	UC-535	5GA-T5	
C19	▮			SI5NP0	TCZ-4.7	TZ07	NP0K-050	ZT-555	5TCCB-V47	
C20	500			SI500	D6-501	TP47	GP2K-501	UC-535	5GA-T5	
C21	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C22	.02	200		P288-02	DD-203	PJ2S2		PT412	2TM-S2	
C23	1500			SI1500	D6-152	TP54	GP2L-152	UC-5215	5GA-D15	
C24	5			SI5NP0	TCZ-4.7	TZ07	NP0K-050	ZT-555	5TCCB-V47	
C25	100	500		1468-0001		5W5T1		MC235	1FM-31	
C26	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C27	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C28	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C29A	10000			BPD-2X01	DD3-103	DK082	811-01	DC-511	5HK-2S1	
B	10000						811-01	DC-511		
C30A	100			♦PA-97-1	♦PC-50	♦1117M1	♦1403-01	UC-531	♦100C1	
B	100							UC-531		
C31	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C32	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C33A	10000			BPD-2X01	DD3-103	DK082	811-01	DC-511	5HK-2S1	
B	10000						811-01	DC-511		
C34	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C35A	300			SI300	D6-301	TP42	GP1K-301	UC-533	5GA-T3	
B	300			SI300	D6-301	TP42	GP1K-301	UC-533	5GA-T3	Note 2
C	300			SI300	D6-301	TP42	GP1K-301	UC-533	5GA-T3	
C36	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	Note 3

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C37	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C38	51									
C39	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C40	2000			SI2000	D6-202	TP56	GP2L-202	UC-522	5HK-D2	
C41	250	500		1468-00025		5W5T25		MC240	1FM-325	
C42	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C43	.006	600		P688-006	D6-602	CUB6D6	GP2-333-602	PT626	6TM-D6	
C44	.005	600		P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C45	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C46	20000			BPD-02		K085				
C47	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C48	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C49	1500	1500		HVD15-0015			1R5KV-152	MCK215		
C50	1500	1500		HVD15-0015			1R5KV-152	MCK215		
C51	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C52	10000			BPD-01	DD-103	K080	811-01	DC-511	5HK-S1	
C53	.05	400		489ZX-05		PJ4S5		PT415	4TM-S5	
C54	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	Note 4
C55	20			SI20NP0	TCZ-20	TZ-13	NP0K-200	ZT-542	5TCC-Q2	

♦ Items C30A, C30B and R37 are combined in one unit.
Note 1. Items C7A, C7B and C7C are combined in one unit.
Note 2. Items C35A, C35B and C35C are combined in one unit.
Note 3. Some models may use a 1000MMF in this application.
Note 4. Not used in all models.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA KNIGHT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	A9.317-A	Q13-137	A47-1Meg-Z	B-70-S	U-53	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A
R2A	1Meg	½	A9.316-A	Q11-137	A47-1Meg-S	B-69	U-54	Bass
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3	500KΩ	½	B9.311-A					Volume & switch
R4A	100Ω	2	A9.310-A	W-100	A43-100	VK-121	R100L	Hum balance-wire wound
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R4A

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA KNIGHT PART No.	IRC PART No.	NOTES
R5	470KΩ	½		BTS-470K	
R6	68Ω	½		BTS-68	
R7	22KΩ	1		BTA-22K	
R8	22KΩ	½		BTS-22K	
R9	150Ω	½		BTS-150	
R10	15KΩ	2		BTB-15K	
R11	1000Ω	½		BTS-1000	
R12	47KΩ	½		BTS-47K	
R13	1000Ω	½		BTS-1000	
R14	1000Ω	½		BTS-1000	Note 2
R15	470KΩ	½		BTS-470K	
R16	100Ω	½		BTS-100	
R17	22KΩ	1		BTA-22K	
R18	150Ω	½		BTS-150	
R19	22KΩ	½		BTS-22K	
R20	15KΩ	2		BTB-15K	
R21	68Ω	½		BTS-68	
R22	1000Ω	½		BTS-1000	
R23	470KΩ	½		BTS-470K	
R24	220KΩ	½		BTS-220K	
R25	68Ω	½		BTS-68	
R26	22KΩ	1		BTA-22K	
R27	1000Ω	½		BTS-1000	
R28	68Ω	½		BTS-68	
R29	68KΩ	½		BTS-68K	
R30	1500Ω	½		BTS-1500	
R31	6800Ω	½		BTS-6800	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA KNIGHT PART No.	IRC PART No.	NOTES
R32	6800Ω	½		BTS-6800	
R33	1000Ω	½		BTS-1000	
R34	220KΩ	½		BTS-220K	
R35	2.2 Meg	½		BTS-2.2Meg	
R36	470KΩ	½		BTS-470K	
R37	47KΩ	½	♦	BTS-47K	
R38	10 Meg	½		BTS-10 Meg	
R39	2.2 Meg	½		BTS-2.2 Meg	
R40	220KΩ	½		BTS-220K	
R41	47KΩ	½		BTS-47K	
R42	22KΩ	½		BTS-22K	
R43	220KΩ	½		BTS-220K	
R44	1200Ω	½		BTS-1200	Note 1
R45	220KΩ	½		BTS-220K	
R46	470KΩ	½		BTS-470K	
R47	100KΩ	½		BTS-100K	
R48	100KΩ	½		BTS-100K	
R49	22KΩ	½		BTS-22K	
R50	220KΩ	½		BTS-220K	
R51	1800Ω	½		BTS-1800	
R52	1 Meg	½		BTS-1 Meg	
R53	100KΩ	½		BTS-100K	
R54	47KΩ	½		BTS-47K	
R55	100KΩ	½		BTS-100K	
R56	220KΩ	½		BTS-220K	
R57	220Ω	2			
R58	220KΩ	½		BTS-220K	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA KNIGHT PART No.	IRC PART No.	NOTES
R59	100Ω	½		BTS-100	
R60	10Ω	½		BTS-10	
R61	150KΩ	½		BTS-150K	
R62	22KΩ	½		BTS-22K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA KNIGHT PART No.	IRC PART No.	NOTES
R63	47KΩ	½		BTS-47K	
R64	1000Ω	15			
R65	2Ω	½			
R66	1000Ω	½		BTS-1000	

♦ Items R37, C30A, C30B are combined in one unit.
Note 1. Some models may use a 2200Ω resistor in this application.
Note 2. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA KNIGHT PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @.78A	576VCT .126ADC	5VAC @2A	B18.126						T-25R16
	SEC. 3	SEC. 4	SEC. 5							
	6.3VAC @.85A	6.3VAC @3.5A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA KNIGHT PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T2	20KΩ CT	500Ω tap @ 8Ω, 4Ω	B15.148					T-25S02	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA KNIGHT PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	FM Ant. Coil	0Ω (tapped)		A2.241				
L2	Fil. Choke	0Ω		2.703	19-1001	TV-189	4604	1.5 Microhenries - IRC part #CLA
L3	FM RF Choke	1.2Ω		32.402	19-1003		4608	4 Microhenries
L4	FM RF Coil	0Ω (tapped)		A2.580				
L5	FM Osc. Coil	0Ω (tapped)		B2.735				
L6	Fil. Choke	0Ω		2.703	19-1001	TV-189	4604	1.5 Microhenries- IRC part #CLA
L7	AM Ant. Coil	1.8Ω		2.699			6300	
L8	Fil. Choke	0Ω		2.703	19-1001	TV-189	4604	1.5 Microhenries- IRC part #CL-1
L9	AM RF Coil	100Ω	2.6Ω	B2.409	14-1072	BC-382	A-5495-RF	
L10	AM Osc. Coil	.8Ω	7.5Ω	A2.698			71-Osc.†	
L11	1st. FM IF	.7Ω	.7Ω	2.415	16-3487	FM-254	1463	
L12	1st. AM IF	9.5Ω	9.5Ω	2.414	16-6758	BC-352	12-C21	
L13	2nd. FM IF	.7Ω	.7Ω	2.415	16-3487	FM-254	1463	
L14	2nd. AM IF	9.5Ω	9.5Ω	2.414	16-6758	BC-353	12-C2	
L15	Ratio Det.	1.7Ω	.9ΩCT	2.474	17-3488 *	FM-255	1465	Tertiary winding-.4Ω Not used in all Models
L16	AM Loop Ant.	.8Ω						

† Drill mounting hole.
* Cut out chassis hole and drill mounting holes.

MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M1	Dial Light		#47 (2 used)
M2	Tuning Cap.	B6.070	
M3	Switch	B12.296	Function Selector
M4	Switch	B9.311	Record equalizer
M5	RC network		Record equalizer
A6	Trimmer Cap.	C13.518	500-1000MMF

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DENVER, COLORADO

MC INTOSH
MODEL C-108

MC INTOSH
MODEL C-108

TRADE NAME	McIntosh Model C-108
MANUFACTURER	McIntosh Laboratory, Inc., 320 Water St., Binghamton, N.Y.
TYPE SET	Five Channel Audio Pre-Amplifier And Equalizer
TUBES (Three)	Type (3) 12AX7 Audio Amplifiers

THIS UNIT IS DESIGNED PRIMARILY TO OPERATE IN CONJUNCTION WITH MC INTOSH 50W-2, 20W-2 or A-116 POWER AMPLIFIERS OR D-101 POWER SUPPLY.

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PARTS LIST AND DESCRIPTIONS

MC INTOSH
MODEL C-108

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: MC INTOSH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	AF Amplifier	12AX7	12AX7	9A	
V2	AF Amplifier	12AX7	12AX7	9A	
V3	AF Amplifier	12AX7	12AX7	9A	

CAPACITORS

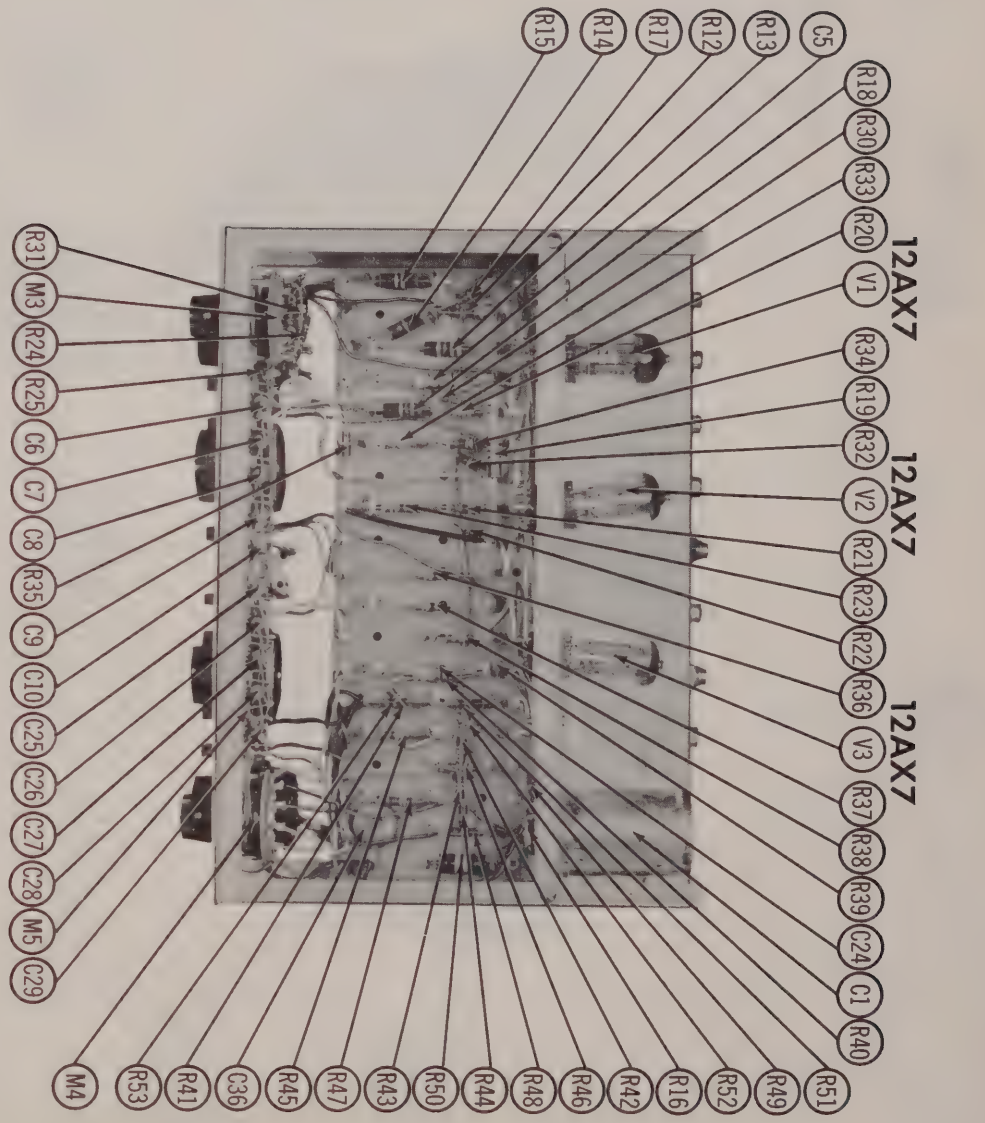
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: MC INTOSH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲20	400								
B	■30	300								
C	▲30	250								
C2	50	6		PRS25/50		BR502		TC29	TVA-1100	
C3	.033	400		P488-033		CUB4S33		PT4133	4TM-S33	
C4	.033	400		P488-033		CUB4S33		PT4133	4TM-S33	
C5	1500			SI1500	D6-152	TP54	GP2L-152	UC-5315	5GA-T15	
C6	330			SI330	D6-331	TP43	GP1K-331	UC-5333	5GA-T33	
C7	470			SI470	D6-471	TP46	GP1K-471	UC-5347	5GA-T47	
C8	750			SI750	D6-751	TP51	GP2L-751	UC-5375	5GA-T75	
C9	1000			SI1000	D6-102	TP52	GP2L-102	UC-521	5GA-D1	
C10	1500			SI1500	D6-152	TP53	GP2L-152	UC-5315	5GA-T15	
C11	.47	200		P288-5		CUB2P5		PT405	2TM-P5	
C12	.47	200		P288-5		CUB2P5		PT405	2TM-P5	
C13	.047	400								
C14	.022	400								
C15	.01	400								
C16	.0047	400								
C17	.033	400		P488-033		CUB4S33		PT4133	4TM-S33	
C18	.47	200		P288-5		PJ2P5		PT415	2TM-P5	
C19	.001	400								
C20	.01	400								
C21	.0022	400								
C22	.022	400								
C23	.1	600		P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C24	330			SI330	D6-331	TP43	GP1K-331	UC-5333	5GA-T33	
C25	220			SI220	D6-221	TP39	GP1K-221	UC-5322	5GA-T22	
C26	330			SI330	D6-331	TP43	GP1K-331	UC-5333	5GA-T33	
C27	470			SI470	D6-471	TP46	GP1K-471	UC-5347	5GA-T47	
C28	750			SI750	D6-751	TP51	GP2L-751	UC-5375	5GA-T75	
C29	1500			SI150	D6-151	TP36	GP2L-151	UC-5215	5GA-T15	
C30	.022	400								
C31	.022	400								
C32	.01	400								
C33	.0047	400								
C34	.033	400		P488-033		CUB4S33		PT4133	4TM-S33	
C35	.47	200		P288-5		PJ2P5		PT405	2TM-P5	
C36A	10000			BPD-2X01	DD3-103	DK-082	811-01	DC-511	5HK-2S1	
B	10000						811-01	DC-511		
C37A	10000			BPD-2X01	DD3-103	DK-082	811-01	DC-511	5HK-2S1	
B	10000						811-01	DC-511		

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: MC INTOSH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	1-010-2058	Q13-137	A47-1Meg-Z	A-132	U-53	Bass
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
R2A	250KΩ	½	1-010-2132	Q13-130	A47-250K-Z	A-127	U-44	Treble
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R2A
R3A	250KΩ	½		Q13-130	A47-250K-Z	A-127	U-44	Volume
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	Attach to R3A
C	Switch			76-1	SWE-12	K-10	US-26	
R4A	100KΩ	½	A339	Q11-128	A47-100K-S	AB-40	SU-41	Input Adj.
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	100KΩ	½	A339	Q11-128	A47-100K-S	AB-40	SU-41	Input Adj.
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R5A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MC INTOSH PART No.	IRC PART No.	
R6	47KΩ	½		BTS-47K	
R7	18KΩ	½		BTS-18K	
R8	10KΩ	½		BTS-10K	
R9	100KΩ	½		BTS-100K	
R10	560KΩ	½		BTS-560K	
R11	560KΩ	½		BTS-560K	
R12	1 Meg	½		BTS-1 Meg	
R13	3300Ω	1		BTA-3300	
R14	1000Ω	1		BTA-1000	
R15	100KΩ	1		BTA-100K	
R16	100KΩ	½		BTS-100K	
R17	1 Meg	½		BTS-1 Meg	
R18	1800Ω	1		BTA-1800	
R19	330KΩ	1		BTA-330K	
R20	330KΩ	½		BTS-330K	
R21	100KΩ	½		BTS-100K	
R22	1800Ω	½		BTS-1800	
R23	100KΩ	½		BTS-100K	
R24	22 Meg	½		BTS-22 Meg	
R25	22 Meg	½		BTS-22 Meg	
R26	22 Meg	½		BTS-22 Meg	
R27	22 Meg	½		BTS-22 Meg	
R28	22 Meg	½		BTS-22 Meg	
R29	22 Meg	½		BTS-22 Meg	
R30	100KΩ	½		BTS-100K	

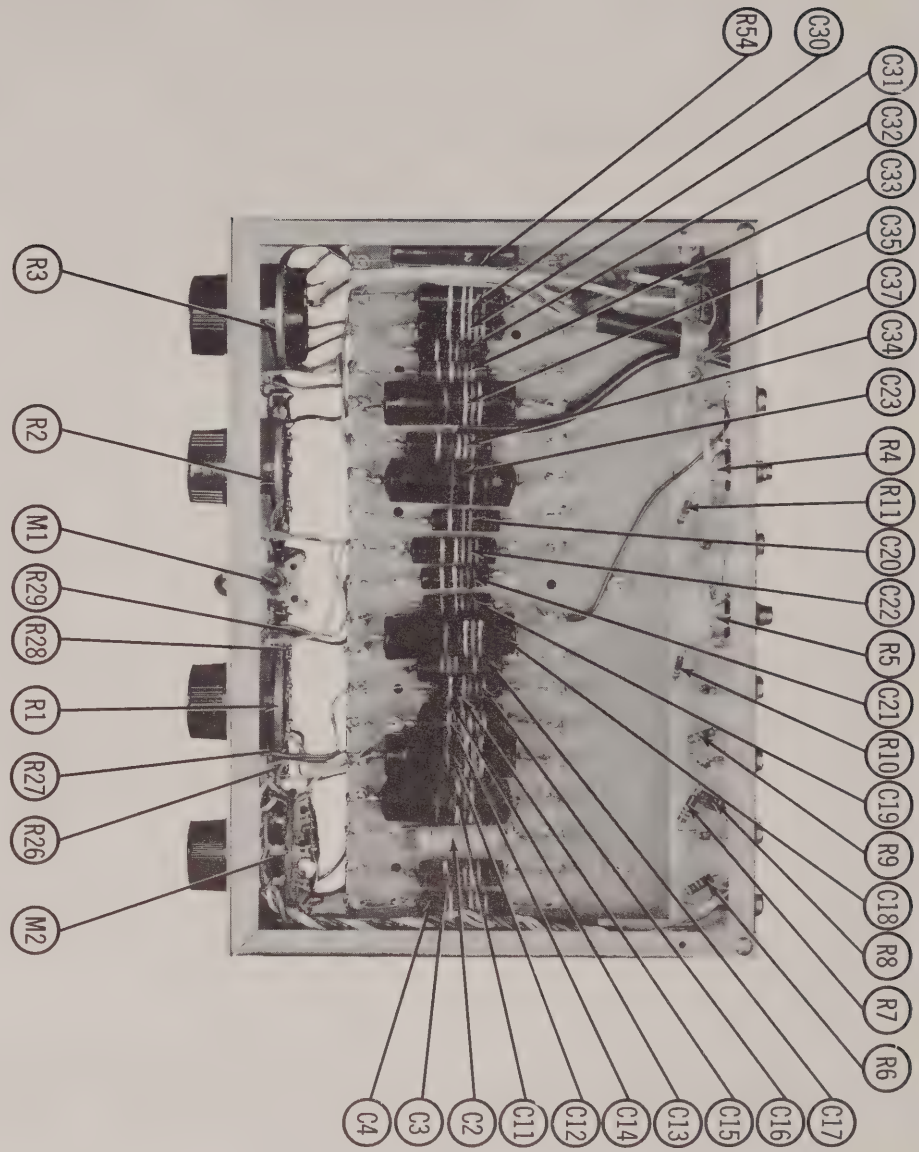
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MC INTOSH PART No.	IRC PART No.	
R31	3.9Meg	½		BTS-3.9Meg	
R32	1 Meg	½		BTS-1 Meg	Note 1
R33	330KΩ	½		BTS-330K	
R34	220KΩ	½		BTS-220K	
R35	1 Meg	½		BTS-1 Meg	
R36	100KΩ	½		BTS-100K	
R37	10KΩ	½		BTS-10K	
R38	1800Ω	½		BTS-1800	
R39	330KΩ	½		BTS-330K	
R40	120KΩ	½		BTS-120K	
R41	22 Meg	½		BTS-22 Meg	Note 2
R42	22 Meg	½		BTS-22 Meg	Note 2
R43	22 Meg	½		BTS-22 Meg	
R44	22 Meg	½		BTS-22 Meg	Note 2
R45	100KΩ	½		BTS-100K	
R46	33KΩ	½		BTS-33K	
R47	15KΩ	½		BTS-15K	
R48	6800Ω	½		BTS-6800	
R49	100KΩ	½		BTS-100K	
R50	10KΩ	2		BTB-10K	Note 3
R51	1 Meg	½		BTS-1 Meg	
R52	1800Ω	½		BTS-1800	
R53	100KΩ	½		BTS-100K	
R54	2Ω	10		1 3/4A-2	

Note 1. Some models may use a 680KΩ resistor in this application.
Note 2. Some models may use a 10 Meg resistor in this application.
Note 3. Some models may use a 12KΩ resistor in this application.

MISCELLANEOUS

ITEM No.	PART NAME	MC INTOSH PART No.	NOTES
M1	Dial Light		#44 Bayonet
M2	Switch		Input Selector
M3	Switch		Rumble Filter
M4	Switch		Aural Compensator
M5	Switch		SPST (10 used) 5 bass comp. & 5 treble comp.

CHASSIS—BOTTOM VIEW



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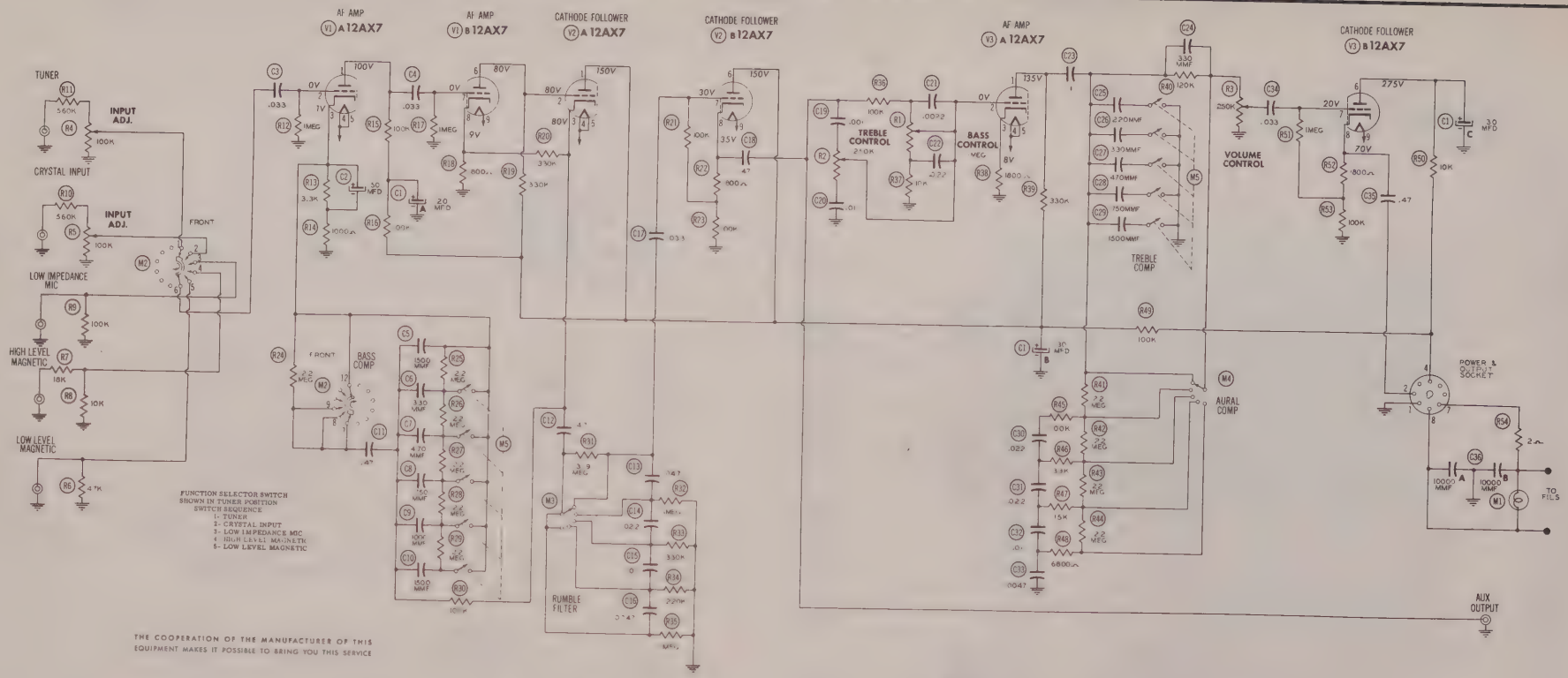

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†310KΩ	1Meg	4.3KΩ	■2Ω	2Ω	†440KΩ	1Meg	1.8KΩ	■3Ω
V 2	12AX7	†110KΩ	†440KΩ	330KΩ	■2Ω	2Ω	†110KΩ	200KΩ	100KΩ	■3Ω
V 3	12AX7	†440KΩ	10KΩ	1.8KΩ	■2Ω	2Ω	†10KΩ	100KΩ	100KΩ	■3Ω

VOLTAGE MEASUREMENTS MADE USING 350VDC SOURCE FOR B+
■ MEASURED FROM PIN 7 OF OUTPUT PLUG
† MEASURED FROM PIN 4 OF OUTPUT PLUG

1 DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt
2 Socket connections are shown as bottom views.
3 Measured values are from marked point to common negative.
4 Line voltage maintained at 117 volts for voltage readings.
5 Nominal [illegible] makes possible a variation of ±5% in voltage and resistance readings.
6 All [illegible] proper input load connected

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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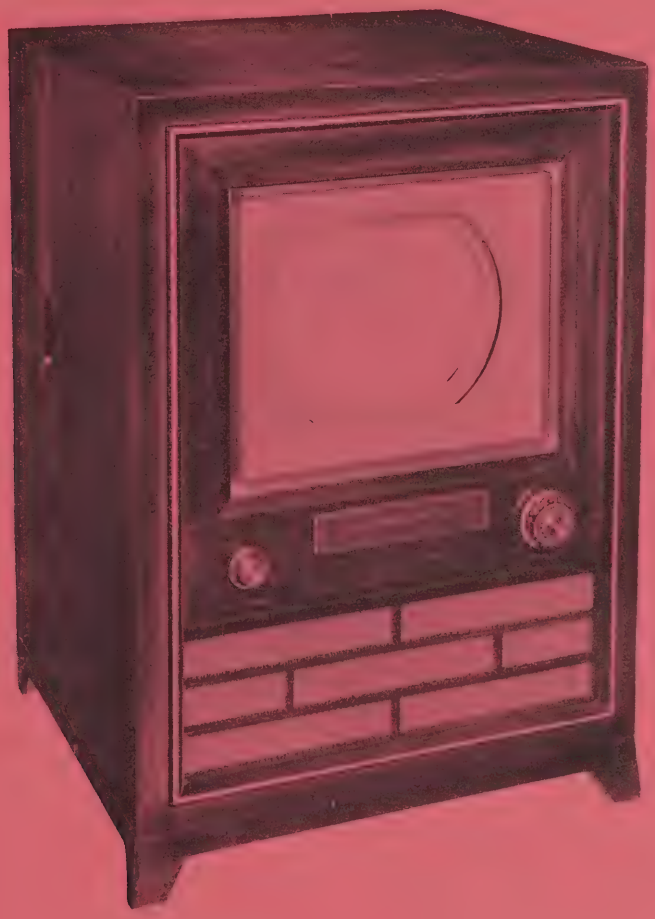

MODEL CT-100

RCA VICTOR
MODEL CT-100 (Ch. CTC2)

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RCA VICTOR
MODEL CT-100 (Ch. CTC2)

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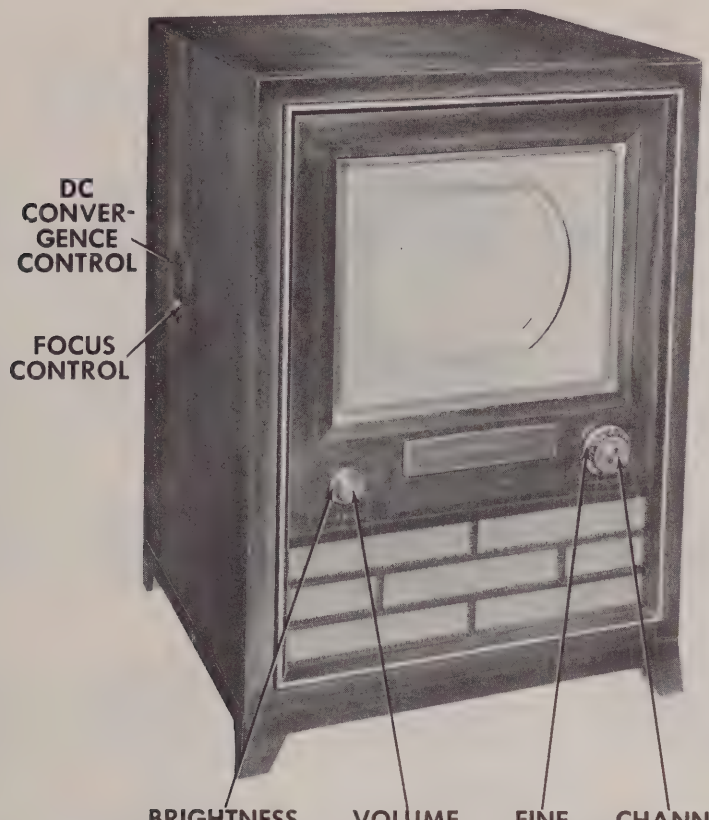

RCA VICTOR
MODEL CT-100 (Ch. CTC2)

TRADE NAME	RCA Victor Model CT-100 (Ch. CTC2)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N. J.
TYPE SET	Television Receiver
TUBES	Thirty-seven

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 4.44 Amp. @ 117 Volts AC
TUNING RANGE– Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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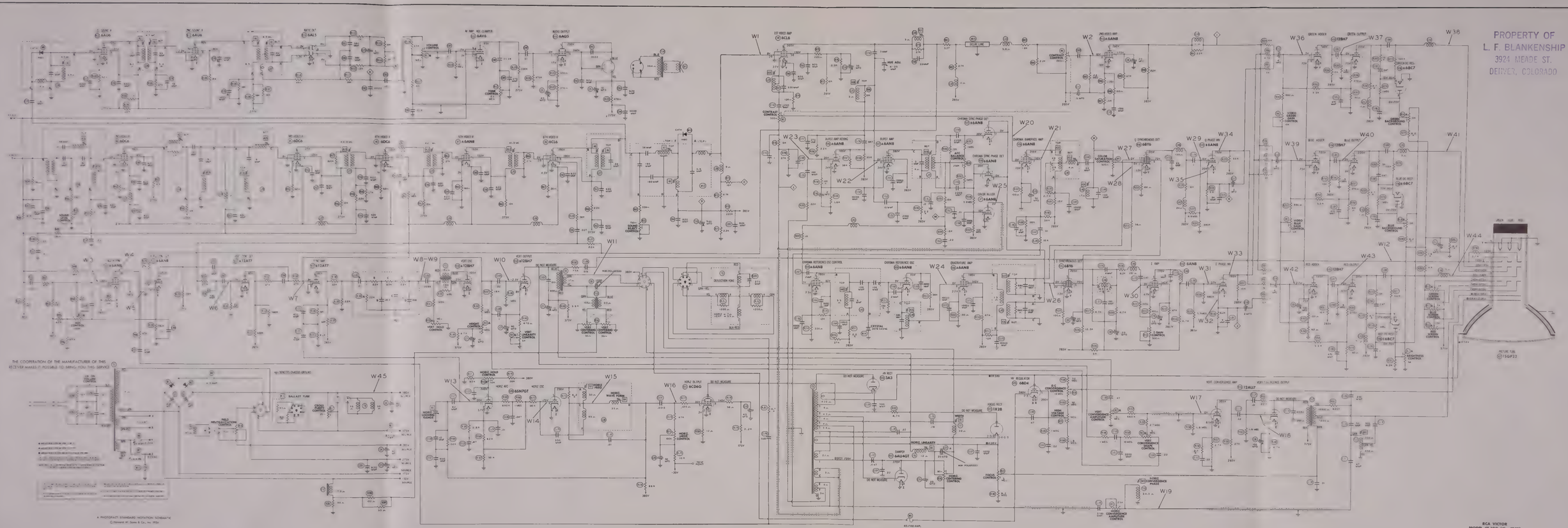
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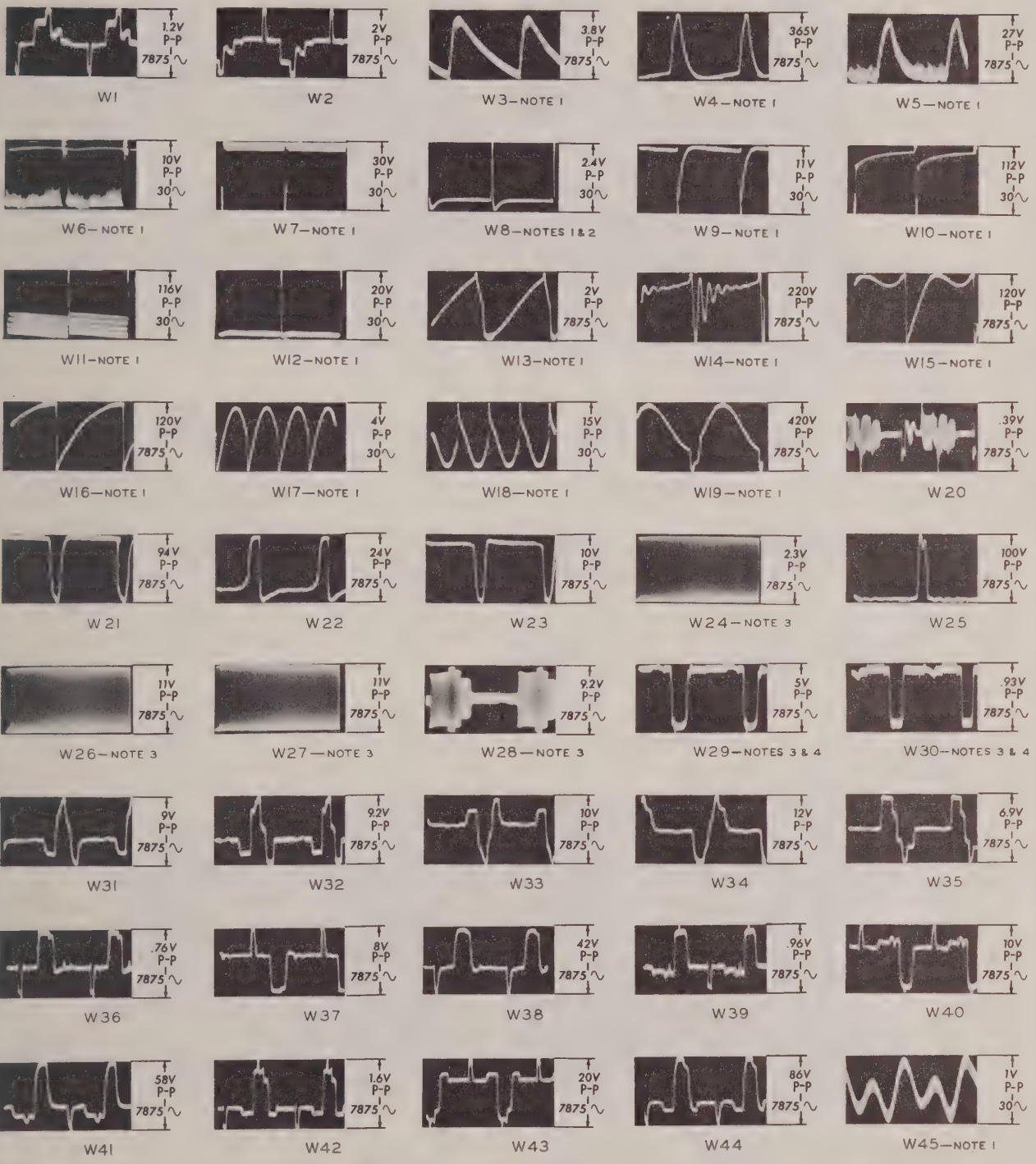
ALL WAVEFORMS TAKEN WITH NTSC COLOR-BAR GENERATOR SET TO PRODUCE FIVE SATURATED COLOR BARS—GREEN, YELLOW, RED, MAGENTA, & BLUE — UNLESS OTHERWISE NOTED.

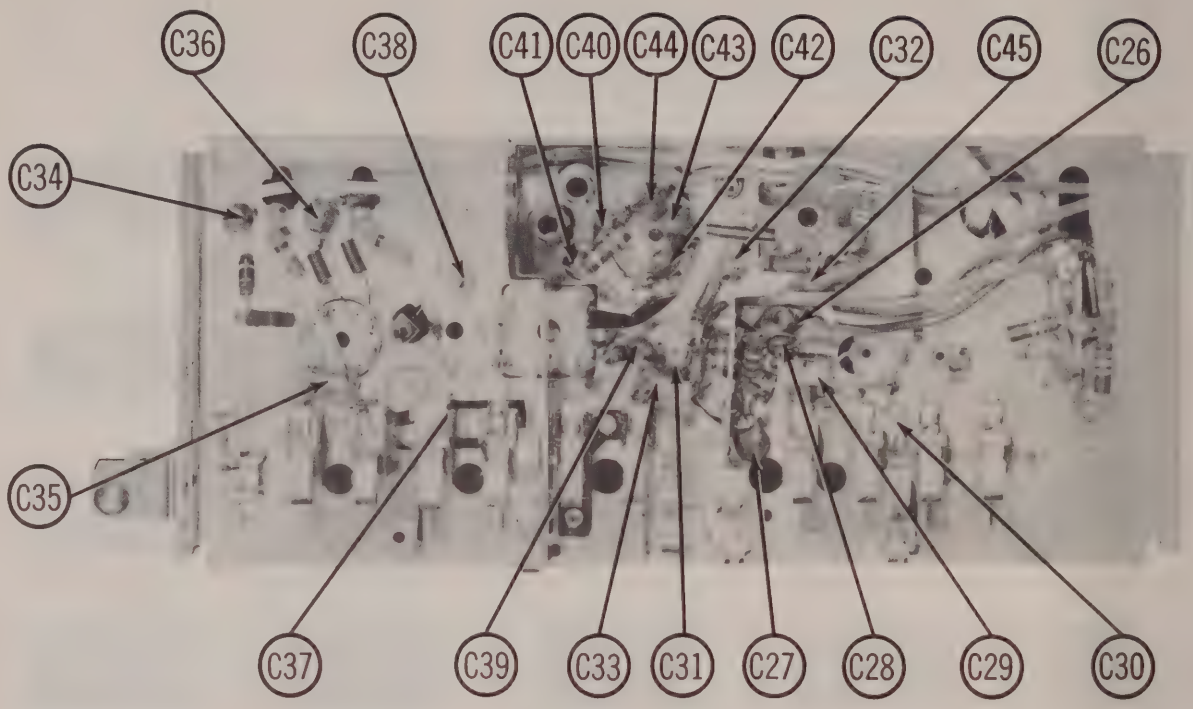


NOTE 1. TAKEN WITH BLACK AND WHITE TEST PATTERN.

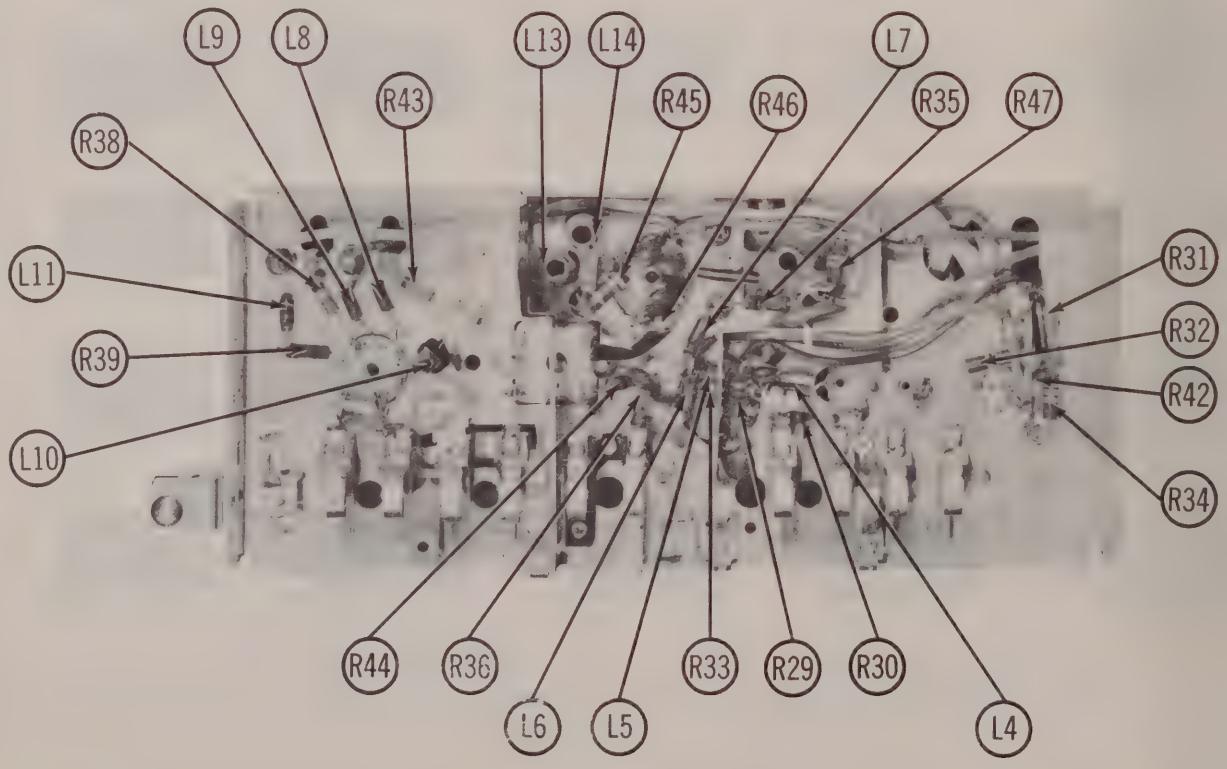
NOTE 2. TAKEN WITH V18 REMOVED FROM SOCKET.

NOTE 3. TAKEN WITH LOW CAPACITY PROBE.

NOTE 4. TAKEN WITH GENERATOR SET TO PRODUCE VERTICAL "I" & "Q" BARS.



RF TUNER-BOTTOM VIEW-CAPACITOR IDENTIFICATION



RF TUNER-BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage should be disabled by removing the fuse (M5) in series with pin 7 of the deflection yoke socket.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Ground pin 2 (grid) of 6CL6 (V8).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to terminal "C" of L35. Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection. Attenuate generator output for -12 volts on VTVM for final peaking of A1 thru A4.
2.	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A5	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Move VTVM to point Ⓐ and retouch A4 for maximum deflection and then repeat step 2.
3.	"	"	"	"	DC probe to point Ⓐ. Common to chassis.		Connect a 1500Ω resistor across terminals "B" and "C" (primary) of L36. Readjust A3 for maximum deflection. Disconnect the 1500Ω resistor and reconnect it across terminals "A" and "D" of L36 and adjust A2 for maximum deflection. Remove the 1500Ω resistor and the jumper from pin 2 of V8 to ground.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.
Ground pin 2 (grid) 6CL6 (V8).

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to terminal "C" of L35. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point Ⓐ. Low side to chassis.	A1, A2, A3, A4	Disconnect stabilizing capacitor C23. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
2.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A5	Reconnect stabilizing capacitor C23. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A4 for maximum amplitude and straightness of crossover lines. Remove jumper from pin 2 of V8 to ground. Continue alignment with step 4.

VIDEO IF ALIGNMENT

If the scope to be used does not have a sensitivity of 1 millivolt per inch a suitable preamplifier may be necessary. A VHF signal generator of crystal accuracy should be used to provide markers.
Beginning with step 7 the sweep or signal generators will be connected to the front terminal of the K3E crystal mixer. Since extremely short leads must be employed in making these connections it is recommended that the KRK12C input head shown in Fig. 4 should be constructed and used in order to obtain reliable response curves.
Three 7.5 volt batteries capable of withstanding considerable current drain are required.
Connect two 7.5 volt batteries in series with a 1000 potentiometer across the 15 volt combination. Also, connect a 1000Ω potentiometer across the third 7.5 volt battery. Connect the positive side of the 7.5 volt battery to chassis and the potentiometer arm to the ungrounded side of C55 and adjust for -6 volts. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 2 (grid) of 6CL6 (V8). Low side to chassis.	Not used	47.25MC (400∿Mod)	Any	Vert. Amp. (thru pre-amplifier if necessary) to point Ⓒ. Low side to chassis.	A6	Connect pin 8 (grid) of 6AN8 (V7) to chassis using a short jumper. Adjust A6 for MINIMUM 400∿ indication on scope.
5.	"	"	"	41.25MC	"	"	A7	"
6.	Direct	High side to pin 2 (grid) of 6CL6 (V8). Low side to chassis. Use very short leads.	44MC (10MC Swp)	41.25MC 41.65MC 45.75MC 47.25MC	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A8, A9	Adjust sweep generator output for 6 volts peak to peak on scope. Couple marker generator loosely to pin 2 of V8. Adjust A8 and A9 for maximum gain with response similar to Fig. 3. While observing response on scope, adjust the sound rejection control (R22) for maximum rejection at 41.25MC. Remove short from pin 8 of V7 to chassis.
7.	Fig.4	Thru input head (Fig.4) to front terminal of K3E crystal and chassis.	Not used	44.9MC (Unmod)	Any non-interfering channel	Use VTVM. DC probe to point Ⓒ. Common to point Ⓓ.	A10	Connect the junction of R100 and R101 to chassis with short jumper. Adjust for maximum deflection. Attenuate generator output to maintain -6 volts on VTVM.
8.	"	"	"	42.1MC	"	"	A11	"
9.	"	"	"	41.3MC	"	"	A12	Adjust for maximum deflection. Attenuate generator output for -6 volts on VTVM. Remove test equipment and 7.5 volt bias supply.
10.	"	"	43MC (20MC Swp)	41.25MC 45.75MC	"	Vert. Amp. thru detector (detector lead of Fig.5) to point Ⓔ. Low side to tuner chassis.	A13, A14	Connect a 56Ω carbon resistor between terminals "C" and "D" of L15 (on tuner) Couple marker generator loosely to pin 3 (grid) of 6U8 (V3). Attenuate sweep generator output for .3 volts peak to peak on scope. Adjust A13 and A14 for maximum gain with response similar to Fig.6. Remove 56Ω resistor from L15.
11.	"	"	Not used	41.25MC (400∿Mod)	"	Vert. Amp. thru detector (detector lead of Fig.5) to pin 5 (plate) of 6CB6 (V4). Low side to chassis (Use scope pre-amp. if necessary).	A15	Connect the load leads of IF test block (Fig.5) to pin 5 (plate) of V5 (6CB6) and V6 (6CB6). Connect the ungrounded side of C55 to chassis. Adjust A15 for MINIMUM 400∿ indication on scope. Remove jumper from ungrounded side of C55 to chassis.

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ALIGNMENT INSTRUCTIONS (cont)

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Fig. 4	Thru input head (Fig. 4) to front terminal of K3E crystal and chassis.	44MC (10MC Swp)	41.25MC 41.65MC 45.75MC	Any non-interfering channel	Vert. Amp. thru detector (detector lead of Fig. 5) to pin 5 (plate) of 6CB6 (V4). Low side to chassis. (Do not use scope pre-amp.)	A16, A17	Couple marker generator loosely to pin 1 (grid) of 6CB6 (V4). Connect the load leads of IF test block (Fig. 5) to pin 5 (plate) of V5 (6CB6) and V6 (6CB6). Attenuate generator output for .3 volt peak to peak on scope. Adjust A16 and A17 for maximum gain with response similar to Fig. 7. While observing response on scope, adjust the sound level control (R15) for maximum rejection at 41.25MC.
13.	"	"	Not used	40.7MC (400% Mod)	"	Vert. Amp. thru detector (detector lead of Fig. 5) to pin 5 (plate) of 6CB6 (V5). Low side chassis. (Use pre-amp. if necessary)	A18	Connect the load leads of the IF test block (Fig. 5) to pin 5 (plate) of 6CB6 (V5) and pin 6 (plate) of 6AN8 (V7). Connect the ungrounded side of C55 to chassis. Adjust for MINIMUM 400% response on scope.
14.	"	"	"	47.25MC (400% Mod)	"	"	A19	Adjust for MINIMUM 400% response on scope. Remove jumper from ungrounded side of C55 to chassis.
15.	"	"	44MC (10MC Swp)	40.7MC 41.65MC 45.75MC 47.25MC	"	Vert. Amp. thru detector (detector lead of Fig. 5) to pin 5 (plate) of 6CB6 (V5). Low side to chassis. (Do not use pre-amp.)	A30, A21	Connect the potentiometer arm of the 15 volt bias supply to the ungrounded side of C55. Connect the positive side of chassis. Adjust the potentiometer arm for -6 volts at C55. Connect a jumper from the junction of R100 and R101 to chassis. Couple the signal generator loosely to pin 1 (grid) of 6CB6 (V4). Adjust for response similar to Fig. 8.
16.	Fig. 9 & Fig. 4	Signal generator in series with sound attenuator pad thru input head (Fig. 4) to front terminal of K3E crystal and chassis.	Not used	43.0MC (400% Mod)	"	Vert. Amp. thru detector (detector lead of Fig. 5) to pin 5 (plate) of 6CB6 (V5). Low side to chassis. (Use pre-amp. if necessary).		Note and mark output level of response on scope. This output level is to be used as reference in step 18.
17.	Fig. 4	Thru input head (Fig. 4) to front terminal of K3E crystal and chassis.	Not used	41.25MC (400% Mod)	"	"	A15	Readjust A15 for MINIMUM response.
18.	Fig. 4	Thru input head (Fig. 4) to front terminal of K3E crystal and chassis.	Not used	43.0MC (400% Mod)	Any non-interfering channel	Vert. Amp. thru detector (detector lead of Fig. 5) to pin 5 (plate) of 6CB6 (V5). Low side to chassis. (Use pre-amp. if necessary)		Turn sound level control (R15) counter clockwise (from position set in step 12) until output level indication on scope is same as obtained in step 16. Remove IF test block (Fig. 5) and scope.

OVERALL VIDEO IF RESPONSE CHECK

Connect the potentiometer arm of the 15 volt bias supply to the ungrounded side of C55. Connect the positive side to chassis. Adjust for -9 volts at C55.
Couple the marker generator loosely to the grid of the first video IF amplifier tube (V4).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19. Fig. 4.	Thru input head (Fig. 4) to front terminal of K3E crystal and chassis.	43MC (10MC Swp)	41.25MC 41.65MC 45.0MC 45.75MC 46.5MC	Any non-interfering channel	Vert. Amp. to point Ⓒ. Common to chassis.		Attenuate sweep generator output for 8 volt peak to peak on scope. Check for response curve similar to Fig. 10. If necessary, retouch A10, A11 and A12 to obtain desired response. Exercise care to obtain marker response exactly as shown in Fig. 10.

KRK12C VHF TUNER ALIGNMENT

In step 20 choose the proper pad (see Fig. 11) to match the output impedance of the sweep generator to be used. If the sweep generator does not have built in markers couple a VHF signal generator loosely to antenna terminals to provide markers.
Connect the negative lead of the 7.5 volt bias supply to the tuner AGC terminal. Connect the positive side to chassis. Adjust the potentiometer arm for -2 volts at tuner AGC terminal.
To minimize RF-IF interaction remove the RF oscillator tube (V2/6AF4) from its socket.
Tuner alignment as outlined below requires the use of a heterodyne frequency meter.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
20. Fig. 11	Thru attenuator pad (Fig. 11) to VHF antenna terminals.	57MC (20MC Swp)	55.25MC 59.75MC	2	Vert. Amp. to point Ⓒ. Low side to chassis. (Use pre-amp. if necessary)	A22 A23 A24 A25 (See Remarks)	Adjust for symmetrical response with maximum gain of center of band pass as in Fig. 12. The curves will have a deep valley due to crystal loading and nonlinear detector characteristics). Do not exceed limits shown in Figs. 12A and 12C. Each channel strip adjustment for an individual channel strip has a corresponding adjustment on all other channel strips. Since these adjustments are identical in position and function they are indicated by the same "A" number in the interests of simplification. Adjustments A22, A23 and A24 are accessible thru holes in the top of the tuner as the channel switch is turned to each channel. Adjustment A25 refers to coupling capacitor whose positioning affects bandwidth of response curve. NOTE: The valley in the response curve (Fig. 12B) may vary from 0-50% (lower dashed curve). If the valley rises above 50% (upper dashed curve) this is an indication of excessive sweep generator output and the sweep generator output should be attenuated. Oscillator injection voltage is adjusted on UHF channel inserts only. Remove test equipment and replace the oscillator tube (V2) in its socket.
		63MC (20MC Swp)	61.25MC 65.75MC	3			
		69MC (20MC Swp)	67.25MC 71.75MC	4			
		79MC (20MC Swp)	77.25MC 81.75MC	5			
		85MC (20MC Swp)	83.25MC 87.75MC	6			
		177MC (20MC Swp)	175.25MC 179.75MC	7			
		183MC (20MC Swp)	181.25MC 185.75MC	8			
		189MC (20MC Swp)	187.25MC 191.75MC	9			
		195MC (20MC Swp)	193.25MC 197.75MC	10			
		201MC (20MC Swp)	199.25MC 203.75MC	11			
		207MC (20MC Swp)	205.25MC 209.75MC	12			
		213MC (20MC Swp)	211.25MC 215.75MC	13			

FIG. 1

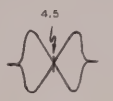

FIG. 2

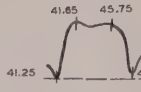

FIG. 3

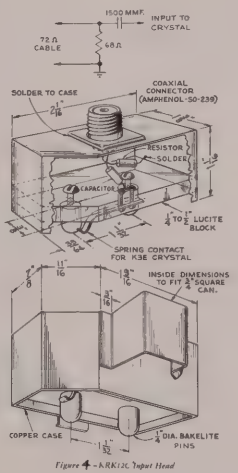

Figure 4 - KRK12C Input Head

21. Connect the potentiometer arm of the 15 volt bias supply to the ungrounded side of C55. Connect the positive side to chassis. Adjust potentiometer arm for -9 volts at C65. Use only enough sweep generator output to provide useable response curve on scope. Set the fine tuning control to the mid-range position. Connection for the heterodyne frequency meter is made as follows: Insert the end of an insulated piece of wire into either of two holes next to the oscillator tube at the right top front corner of the tuner. Use care so that the wire does not touch any tuned circuits. Connect other end of wire to RF input of frequency meter.

22.	Connect frequency meter as in step 21.	Not used	Freq. meter to 257MC	13	Not used	A26	Adjust for audible beat on freq. meter.
23.	Fig. 11	Thru attenuator pad (Fig. 11) to VHF antenna terminals.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point Ⓒ. Common to chassis.	A27 A24	Adjust A27 for maximum gain on scope. Adjust A24 for maximum gain and flat-topped curve. Recheck A27 for maximum gain at center of band with flat-topped response.
24.	Connect freq. meter as in step 21.	Not used	Freq. meter to 251MC 245MC 239MC 233MC 227MC 221MC 129MC 123MC 117MC 107MC 101MC	12 11 10 9 8 7 6 5 4 3 2	Not used	A26 A24	Adjust A26 on each channel for audible beat. Connect sweep generator and scope as in step 23. Set sweep and marker to proper frequencies (see chart) for each channel and adjust A24 if necessary for maximum gain and proper response. Do not readjust A27.
25.	Direct	High side to point Ⓕ. Low side to chassis.	Not used	43.5MC (400% Mod)	Any	Vert. Amp. to point Ⓒ. Common to chassis.	A28	Adjust for MINIMUM 400% indication on scope. Remove test equipment.

KRK12C UHF TUNER ALIGNMENT

Alignment of the UHF portion of the tuner should not be attempted unless the following test equipment is available, in addition to the usual VHF test equipment: UHF sweep generator covering the frequency range of 470MC to 890MC. A marker generator, of crystal accuracy, covering the same frequency range.
Remove the RF oscillator tube (V2/6AF4) from its socket.
Connect the potentiometer arm of the 15 volt bias supply to the ungrounded side of C55. Connect the positive lead to chassis. Adjust the potentiometer arm for -9 volts at C55.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
If strong interference is encountered from an *FM* station adjust the *FM* trap to minimize this interference. This trap is fastened to the transmission line inside the receiver cabinet.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
26. 10DB Attenuator Pad	Thru attenuator pad to UHF antenna terminals. Connect UHF marker generator loosely to UHF antenna terminals.	Set sweep to cover channel being aligned (See chart) Use 20MC sweep width	Set to video and sound frequency of channel being aligned (See chart).	14 thru 83	Vert. Amp. to point Ⓒ. Low side to tuner chassis. (Use pre-amp. if necessary).	A29 A23 A24	Adjust A29, A23 and A24 for response similar to Fig. 13 for all UHF channel strip inserts. Remove test equipment and replace the 6AF4 (V2) in its socket.
27. "	"	"	Set to video carrier freq. of channel being aligned.	14 thru 83	Vert. Amp. to point Ⓒ. Low side to chassis.	A26	Attenuate sweep generator for 8 volts peak to peak on scope. Set fine tuning control to its mid-range position. Connect VHF signal generator to point Ⓕ using very short leads. Set generator frequency to 45.75MC. Adjust A26 for channel strip being aligned until 45.75MC and video carrier marker coincide on response curve as in Fig. 14. Adjust A24 of channel strip being aligned for maximum gain with proper waveshape. Connect the DC probe of VTVM to point Ⓕ. Common to chassis. Set the oscillator injection adjustment for reading on VTVM between 0.1 volt and 0.3 volt on all UHF channels. Remove all test equipment.

VIDEO TRAP ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
28. .01MFD	High side to pin 2 (grid) of 6CL6 (V8). Low side to chassis.	Not used	4.5MC (400% Mod)	Any	Vert. Amp. thru detector (detector lead of Fig. 6) to point Ⓖ. Low side to chassis.	A30	Ground pin 2 (grid) of 6CL6 (V8). Short the ungrounded side of C144 (in plate circuit of V7B) to chassis. Turn contrast control fully clockwise. Adjust A30 for MINIMUM 400% response on scope. Remove jumpers from pin 2 of V8 and C144.
29.	This step requires the use of a 100% saturated color bar generator (If this equipment is not available use the alternate method given in step 30.) Connect the vert. amp. of a wide band oscilloscope to red grid (pin 3) of the picture tube. Connect the high side of the color bar generator to pin 2 (grid) of 6CL6 (V8). Low side to chassis. Adjust A31 for MINIMUM color sub-carrier indication in the video signal.						
30. .1MFD	High side to pin 2 (grid) of 6CL6 (V8). Low side to chassis.	2.5MC (3MC Swp)	.5MC 1.5MC 2.5MC 3.58MC	Any	Vert. Amp. thru detector (detector lead of Fig. 6) to point Ⓖ. Low side to chassis. (Use wide band scope).	A31	To prevent noise from second detector appearing on scope connect pin 2 (grid) of 6CL6 (V8) to chassis. Turn contrast control maximum clockwise. Check for response similar to Fig. 15. Increase sweep output so that the 3.58MC portion of trace is raised above the scope base line. Adjust A31 for MINIMUM marker amplitude.

RESPONSE CHECK OF VIDEO CIRCUITS

These circuits are not adjustable. The response check is made to determine if the circuits are operating properly.
Leave the sweep generator connected as in step 30.
Remove the 3.58MC crystal (M14). Turn the color saturation control (R9A) to its maximum counter clockwise position. Connect the scope through the detector (Fig. 5) to each picture tube grid (pins 3, 18 and 6). Check for response similar to Fig. 16 at each picture tube grid. Attenuate sweep generator output to prevent overload.

PONSE CHECK OF "I" AND "Q" CHANNELS

These circuits are not adjustable. The response check is made to determine if the circuits are operating satisfactorily. Connect the vertical amplifier of scope through the detector (Fig. 5) to point Ⓙ. Low side to chassis. Connect high side of sweep generator thru .1MFD capacitor to pin 1 (grid) of 6BY6 (V3U). Low side to chassis. Turn the color saturation control (R9A) maximum clockwise. Check for response similar to Fig. 17A. Move sweep generator to pin 1 (grid) of 6BY6 (V3G). Connect the vertical amplifier of scope through detector (Fig. 5) to point Ⓙ. Check for response similar to Fig. 17B.
Remove test equipment and replace the 3.58MC crystal (M14). Remove short from pen 2 (grid) of V8.

RCA VICTOR
MODEL CT-100 (Ch. CTC2)

ALIGNMENT INSTRUCTIONS (cont)

FIRST VIDEO AMPLIFIER AND BAND PASS AMPLIFIER ALIGNMENT

Remove 6CL6 (V8) from socket (or short pin 2 of V8 to chassis).
Turn contrast control and color saturation control fully clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
31.	.1MFD	High side to pin 2 (grid) of 6CL6 (V9). Low side to chassis.	3MC (3MC Swp)	2.5MC 3.58MC 4.1MC	Any	Vert. Amp. thru detector (Fig. 5) to pin 1 (grid) of 6BY6 (V30). Low side to chassis.	A32, A33, A34	Adjust for maximum gain and response similar to Fig. 19. Remove test equipment and replace V8 (or remove short from pin 2 of V8) in its socket. Switch off receiver power and replace fuse (M5).

ALTERNATE FIRST VIDEO AMPLIFIER AND BAND PASS AMPLIFIER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. Connect the potentiometer arm of the 7.5 volt biass supply to pin 5 (diode plates) of 6AV6 (V15). Connect the positive side to chassis. Adjust the potentiometer arm for - 2 volts at pin 5 of V15. Connect the potentiometer arm of the 15 volt bias supply to the ungrounded side of C55. Connect the positive side to chassis. Adjust the potentiometer arm for - 9 volts at C55.
Connect a jumper across the terminals of the 4.5MC trap (L29).

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
32.	Direct	Connect signal generator and video sweep modulator across antenna terminals (See remarks)	3MC (3MC Swp)	67.25MC	4	Vert. Amp. thru detector (Fig. 5) to pin 1 (cathode) of 6CL6 (V9). Low side to chassis.		Signal generator should provide channel 4 video carrier frequency (67.25MC) with crystal accuracy. Connect DC probe of VTVM to point Ⓒ. Common to point Ⓓ. With zero video sweep modulation adjust signal generator output (67.25MC for 3 volts on VTVM. Remove VTVM and apply video sweep modulation, being careful not to overload. Couple VHF signal generator loosely to pin 1 (grid) of 6DC8 (V4) to provide 45.75MC marker. To set the local oscillator exactly on frequency adjust fine tuning until a beat pattern is obtained on scope. Remove VHF generator from pin 1 of V4. Response on scope should be similar to Fig. 18.
33.	"	"	"	"	"	Vert. Amp. thru detector (Fig. 5) to pin 2 (cathode) of 6BY6 (V3). Low side to chassis.	A32, A33, A34	Remove jumper across terminals of L29. Connect short jumper from point Ⓛ to chassis. Turn contrast control fully clockwise. Adjust A32, A33 and A34 for maximum gain and response similar to Fig. 19. Remove test equipment. Switch off receiver power and replace fuse (M5). Remove jumper from point Ⓛ to chassis.

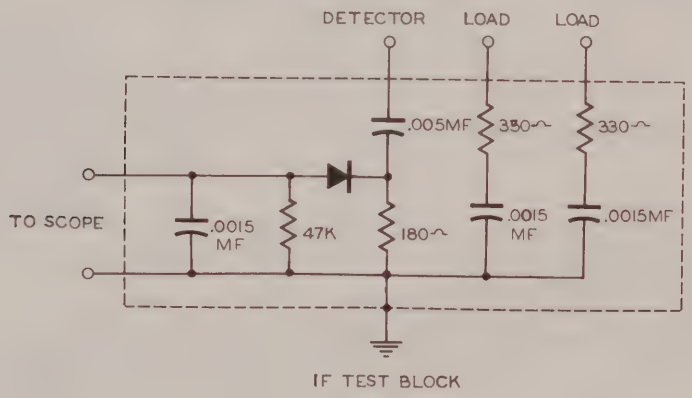

FIG. 5

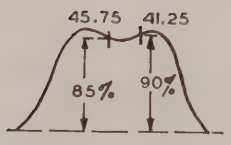

FIG. 6

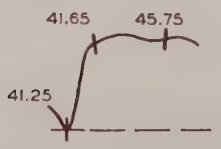

FIG. 7

ALIGNMENT INSTRUCTIONS (cont)

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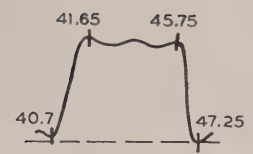


FIG.8

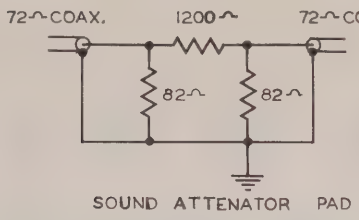


FIG.9

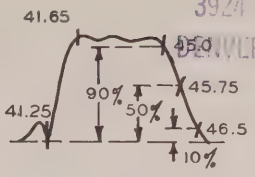


FIG.10

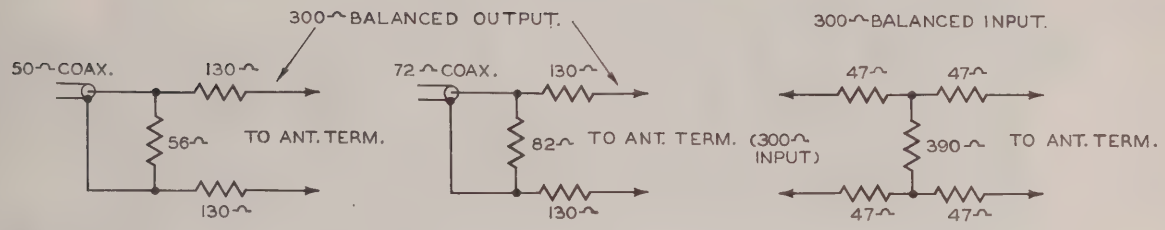


FIG.11

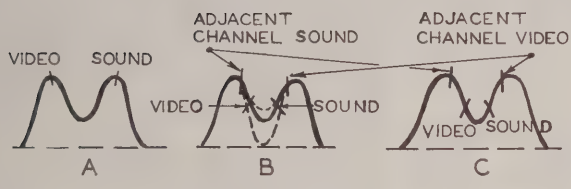


FIG.12

FIG.13

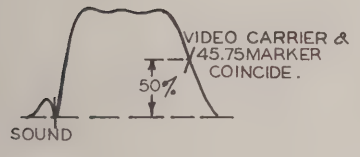


FIG.14

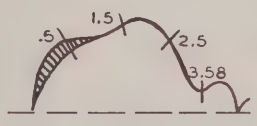


FIG.15

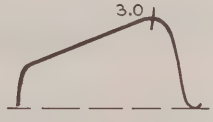


FIG.16

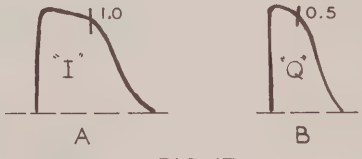


FIG.17

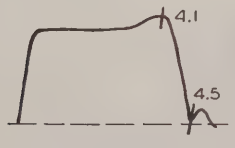


FIG.18

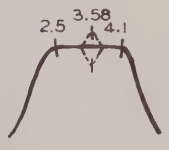
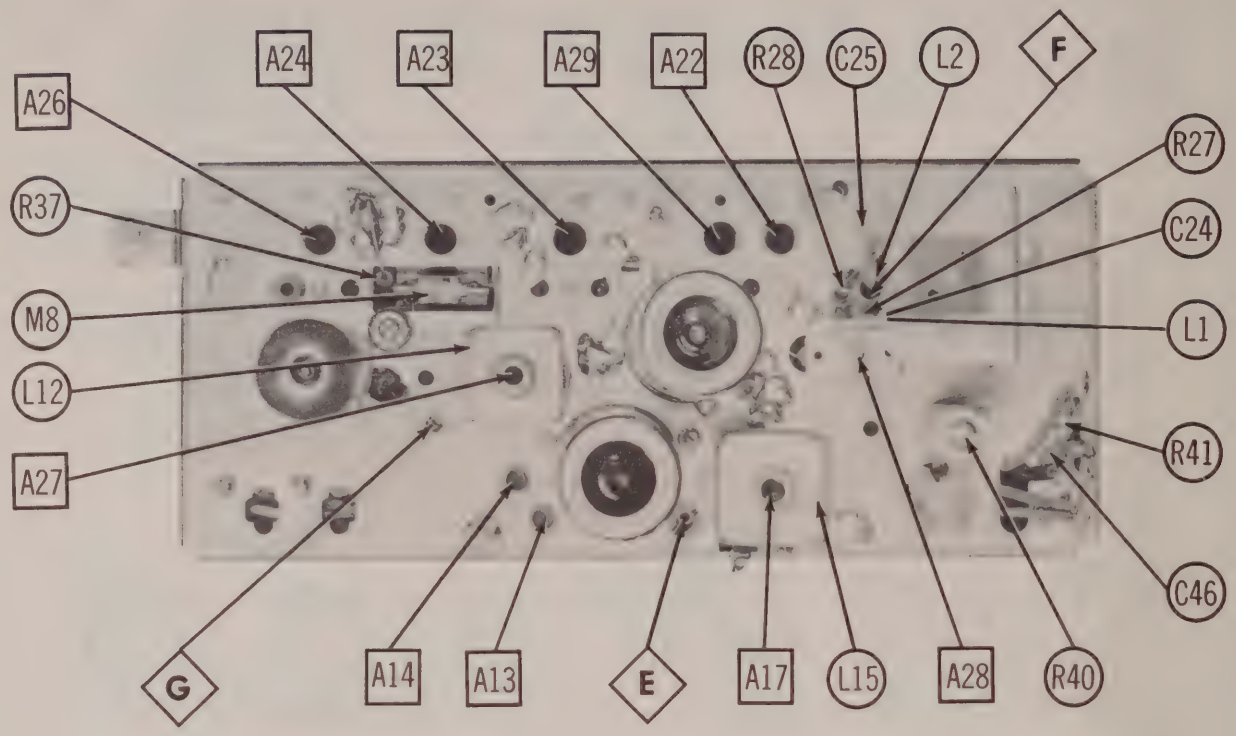


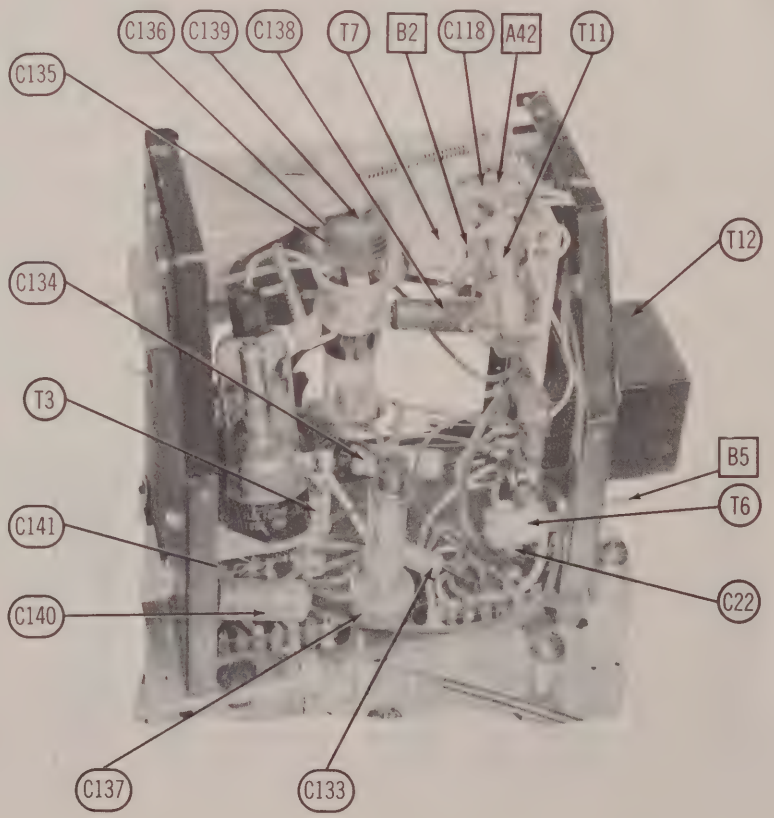
FIG.19

TELEVISION CHANNEL FREQUENCIES

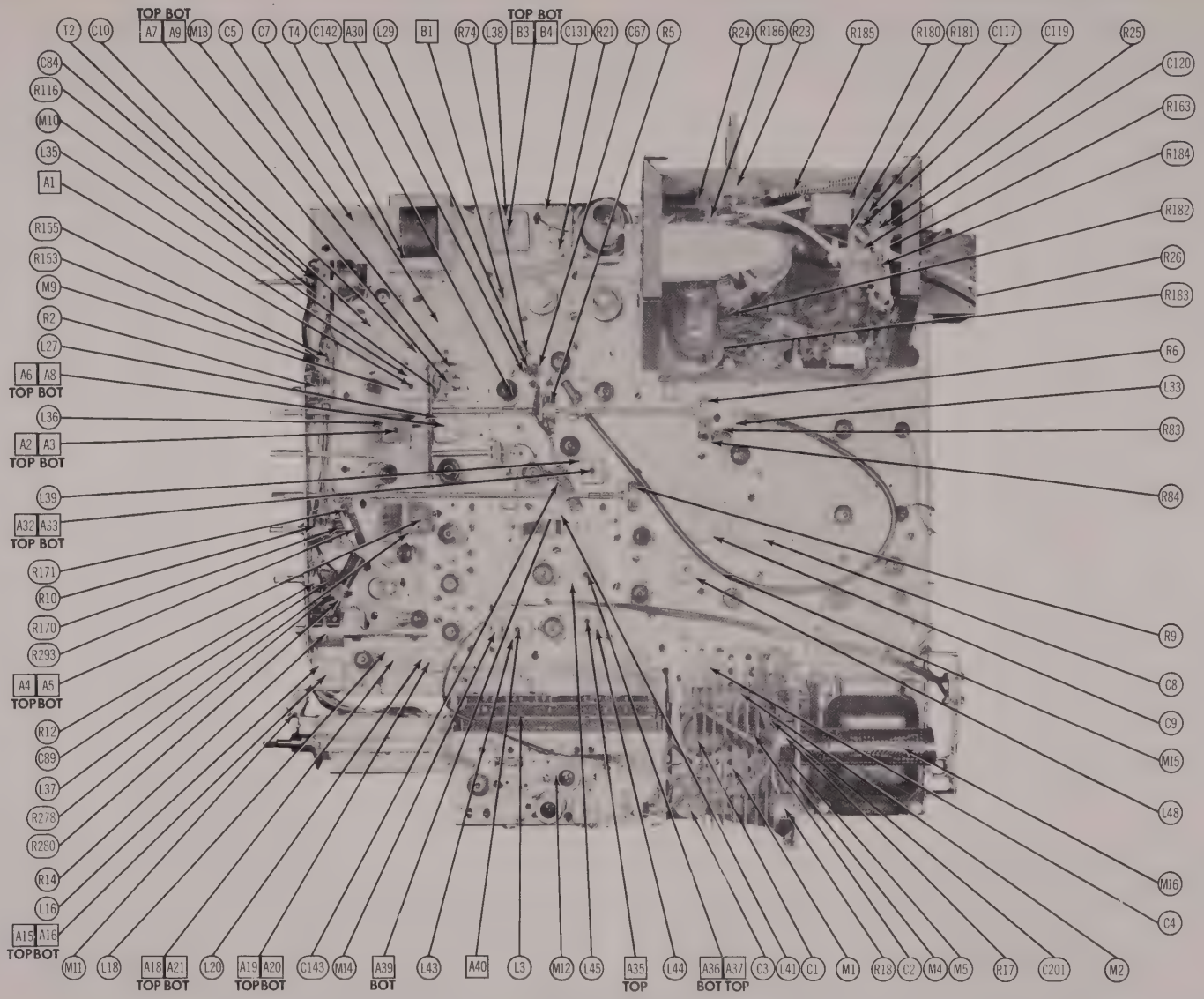
Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier	Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier	Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier	Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier
2	54-60	55.25	59.75	23	524-530	525.25	529.75	44	650-656	651.25	655.75	64	770-776	771.25	775.75
3	60-66	61.25	65.75	24	530-536	531.25	535.75	45	656-662	657.25	661.75	65	776-782	777.25	781.75
4	66-72	67.25	71.75	25	536-542	537.25	541.75	46	662-668	663.25	667.75	66	782-788	783.25	787.75
5	76-82	77.25	81.75	26	542-548	543.25	547.75	47	668-674	669.25	673.75	67	788-794	789.25	793.75
6	82-88	83.25	87.75	27	548-554	549.25	553.75	48	674-680	675.25	679.75	68	794-800	795.25	799.75
7	174-180	175.25	179.75	28	554-560	555.25	559.75	49	680-686	681.25	685.75	69	800-806	801.25	805.75
8	180-186	181.25	185.75	29	560-566	561.25	565.75	50	686-692	687.25	691.75	70	806-812	807.25	811.75
9	186-192	187.25	191.75	30	566-572	567.25	571.75	51	692-698	693.25	697.75	71	812-818	813.25	817.75
10	192-198	193.25	197.75	31	572-578	573.25	577.75	52	698-704	699.25	703.75	72	818-824	819.25	823.75
11	198-204	199.25	203.75	32	578-584	579.25	583.75	53	704-710	705.25	709.75	73	824-830	825.25	829.75
12	204-210	205.25	209.75	33	584-590	585.25	598.75	54	710-716	711.25	715.75	74	830-836	831.25	835.75
13	210-216	211.25	215.75	34	590-596	591.25	595.75	55	716-722	717.25	721.75	75	836-842	837.25	841.75
14	470-476	471.25	475.75	35	596-602	597.25	601.75	56	722-728	723.25	727.75	76	842-848	843.25	847.75
15	476-482	477.25	481.75	36	602-608	603.25	607.75	57	728-734	729.25	733.75	77	848-854	849.25	853.75
16	482-488	483.25	487.75	37	608-614	609.25	613.75	58	734-740	735.25	739.75	78	854-860	855.25	859.75
17	488-494	489.25	493.75	38	614-620	615.25	619.75	59	740-746	741.25	745.75	79	860-866	861.25	865.75
18	494-500	495.25	499.75	39	620-626	621.25	625.75	60	746-752	747.25	751.75	80	866-872	867.25	871.75
19	500-506	501.25	505.75	40	626-632	627.25	631.75	61	752-758	753.25	757.75	81	872-878	873.25	877.75
20	506-512	507.25	511.75	41	632-638	633.25	637.75	62	758-764	759.25	763.75	82	878-884	879.25	883.75
21	512-518	513.25	517.75	42	638-644	639.25	643.75	63	764-770	765.25	769.75	83	884-890	885.25	889.75
22	518-524	519.25	523.75	43	644-650	645.25	649.75								



RF TUNER-TOP VIEW



HIGH VOLTAGE COMPARTMENT



CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	† 1. 4KΩ	8. 3Meg	8. 8Meg	0Ω	. 1Ω	8. 8Meg	800KΩ	120Ω	0Ω
V 2	6AF4	† 11. 4KΩ	10KΩ	. 1Ω	0Ω	0Ω	10KΩ	† 11. 4KΩ		
V 3	6U8	INF.	INF.	† 12. 4KΩ	0Ω	. 1Ω	† 415Ω	INF.	56Ω	0Ω
V 4	6CB6	50KΩ	62Ω	0Ω	. 1Ω	† 10. 8KΩ	† 48KΩ	0Ω		
V 5	6CB6	49KΩ	62Ω	0Ω	. 1Ω	†10. 8KΩ	†10. 8KΩ	0Ω		
V 6	6CB6	27KΩ	62Ω	. 1Ω	0Ω	†10. 8KΩ	†10. 8KΩ	0Ω		
V 7	6AN8	27KΩ	† 100Meg	0Ω	. 1Ω	0Ω	† 10. 8KΩ	† 10. 8KΩ	. 1Ω	180Ω
V 8	6CL6	120Ω	. 1Ω	† 3KΩ	. 1Ω	0Ω	† 3KΩ	0Ω	† 3KΩ	. 1Ω
V 9	6CL6	120Ω	6. 9KΩ	† 7. 5KΩ	. 1Ω	0Ω	† 5. 5KΩ	0Ω	† 7. 5KΩ	6. 9KΩ
V 10	6AN8	† 13KΩ	390KΩ	3KΩ	0Ω	. 1Ω	† 22KΩ	† 47KΩ	2. 2Meg	1. 7KΩ
V 11	6AN8	† 3. 9KΩ	† 33KΩ	380KΩ	† 10. 3KΩ	† 10. 3KΩ	300KΩ	† 0Ω	† 1. 7Meg	† 330Ω
V 12	6AU6	3. 8Ω	0Ω	0Ω	. 1Ω	† 11. 8KΩ	† 11. 8KΩ	82Ω		
V 13	6AU6	47KΩ	0Ω	. 1Ω	0Ω	† 19KΩ	† 30KΩ	0Ω		
V 14	6AL5	11KΩ	11. 2KΩ	0Ω	. 1Ω	INF.	0Ω	INF.		
V 15	6AV6	10 Meg	0Ω	0Ω	. 1Ω	800KΩ	800KΩ	† 330KΩ		
V 16	6AQ5	470KΩ	660Ω	0Ω	. 1Ω	† 1. 6KΩ	† 1. 2KΩ	470KΩ		
V 17	12AT7	† 350KΩ	2. 2Meg	0Ω	0Ω	0Ω	† 15KΩ	† 1. 2Meg	0Ω	. 1Ω
V 18	12BH7	† 2. 2Meg	1. 5Meg	0Ω	. 1Ω	. 1Ω	† 6. 2KΩ	1Meg	1. 5KΩ	0Ω
V 19	12AU7	† 1. 2KΩ	1. 8Meg	4. 7KΩ	. 1Ω	. 1Ω	† 28KΩ	550KΩ	2. 7KΩ	0Ω
V 20	6SN7GT	1. 8Meg	† 45KΩ	230KΩ	250KΩ	† 68KΩ	0Ω	0Ω	. 1Ω	
V 21	6CD6G	60KΩ	. 1Ω	12Ω	10KΩ	60KΩ	¶ 2. 2KΩ	0Ω	¶ 2. 2KΩ	TOP CAP • 12. 5Ω
V 22	6AU4GT	INF.	INF.	INF.	INF.	† 80Ω	INF.	0Ω	. 1Ω	
V 23	1X2B	13 Meg	INF.	INF.	INF	13 Meg	INF.	INF	INF.	TOP CAP • 4. 7KΩ
V 24	3A3	INF.	118Meg	INF.	INF.	INF.	INF.	118Meg	INF	TOP CAP • 430Ω
V 25	6BD4GT	† 6Ω	† 10. 3KΩ	INF.	INF.	2. 8Meg	INF.	† 10. 3KΩ	INF	TOP CAP 118 Meg
V 26	6AN8	† 20KΩ	100KΩ	1. 8KΩ	0Ω	. 1Ω	† 10. 1KΩ	† 27KΩ	37KΩ	150Ω
V 27	6AN8	. 3Ω	. 3Ω	† 108Meg	0Ω	. 1Ω	† 2. 5KΩ	† 340Ω	2. 2KΩ	1. 8KΩ
V 28	6AN8	†106Meg	† 106Meg	. 3Ω	0Ω	. 1Ω	†10. 3KΩ	†47KΩ	. 4Ω	180Ω
V 29	6AN8	† 39KΩ	150KΩ	. 7Ω	0Ω	. 1Ω	† 2. 5KΩ	† 11. 5KΩ	† 107Meg	330Ω
V 30	6BY6	150Ω	100Ω	0Ω	. 1Ω	† 18KΩ	† 13KΩ	. 3Ω		
V 31	6BY6	200Ω	100Ω	0Ω	. 1Ω	† 8. 5KΩ	† 13KΩ	. 3Ω		
V 32	6AN8	† 8 KΩ	390KΩ	6. 2KΩ	0Ω	. 1Ω	† 10KΩ	† 47KΩ	1 Meg	600Ω
V 33	12BH7	† 5KΩ	1. 8Meg	450Ω	0Ω	0Ω	† 10. 3KΩ	1. 8KΩ	200Ω	. 1Ω
V 34	12BH7	† 5KΩ	1. 8Meg	450Ω	0Ω	0Ω	† 10. 3KΩ	1. 8KΩ	200Ω	. 1Ω
V 35	12BH7	† 5KΩ	1. 8Meg	450Ω	0Ω	0Ω	† 10. 3KΩ	3. 5KΩ	200Ω	. 1Ω
V 36	6BC7	1 Meg	2KΩ	0Ω	0Ω	. 1Ω	7KΩ	1 Meg	7KΩ	1 Meg
V 37	15GP22	PIN 1 0Ω	PIN 2 6KΩ	PIN 3 1. 1Meg	PIN 4 † 5KΩ	PIN 6 13. 2Meg	PIN 7 3. 3KΩ	PIN 8 1. 1Meg	PIN 9 † 5KΩ	PIN 13 68Meg
		PIN 17 † 5KΩ	PIN 18 1. 1Meg	PIN 19 3. 3KΩ	PIN 20 . 1Ω					

† MEASURED FROM OUTPUT OF M2-C2.
¶ MEASURED FROM JUNCTION OF C1 & C2.
• MEASURED FROM PIN 3 OF V22.

DISASSEMBLY INSTRUCTIONS

1. Remove 8 push on type control knobs from front panel.
2. Disconnect 2 push-on type control knobs from side panel of cabinet.
3. Remove 8 wood screws and 2 metal screws. Remove rear cover.
4. Disconnect speaker plug, CRT-socket, yoke plug, field neutr. plug and purity coil plug.
5. Remove 8 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.

TUBE PLACEMENT CHART

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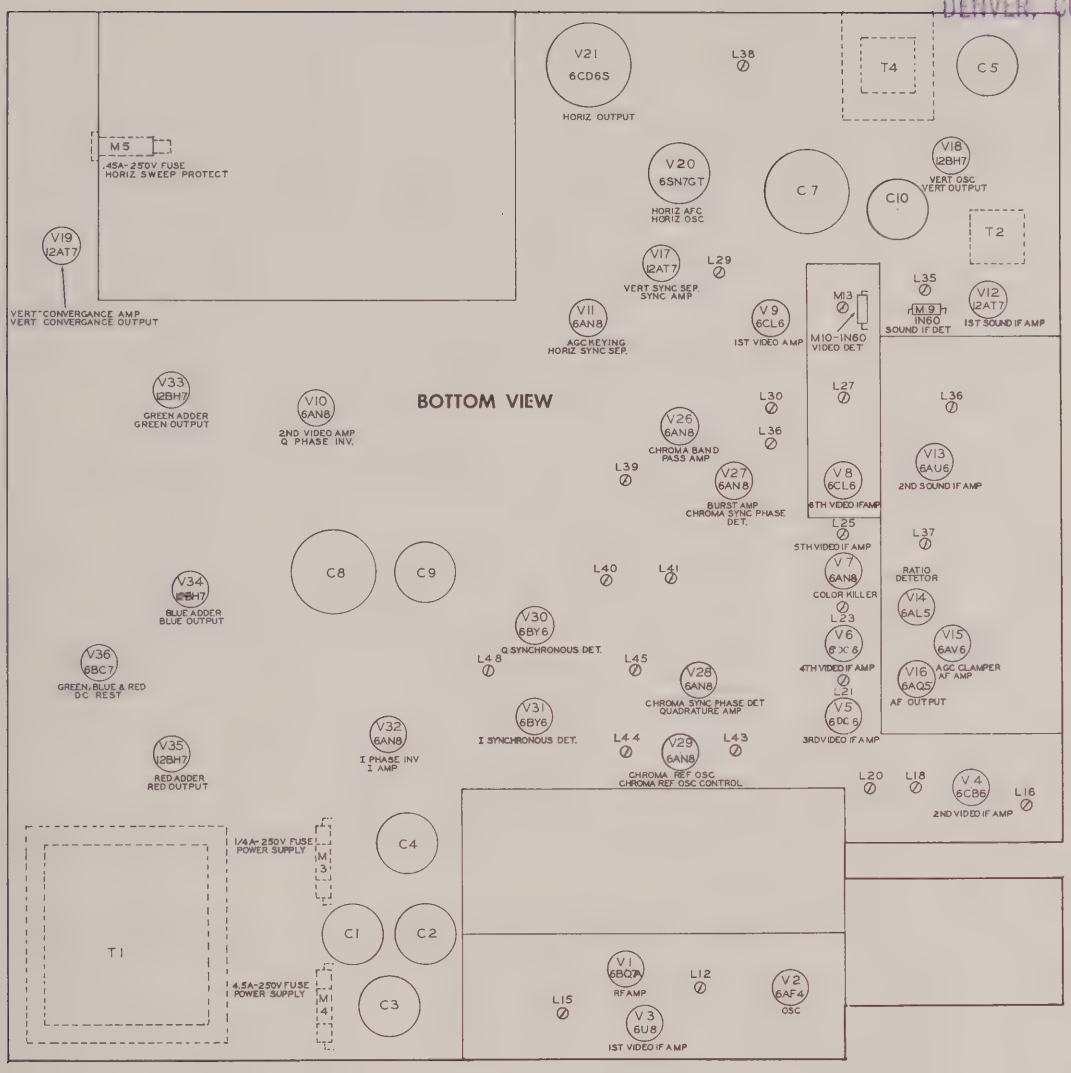
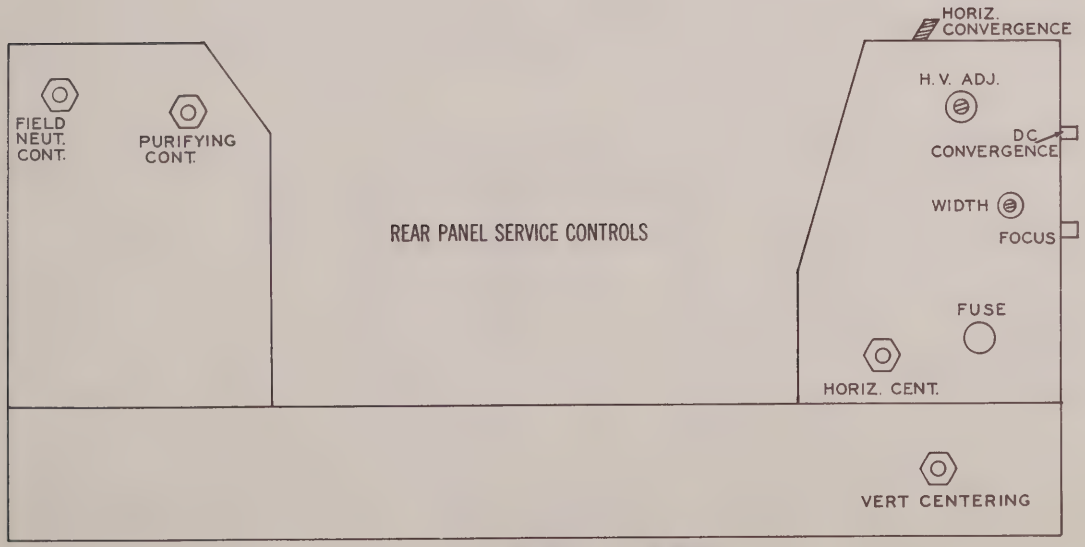
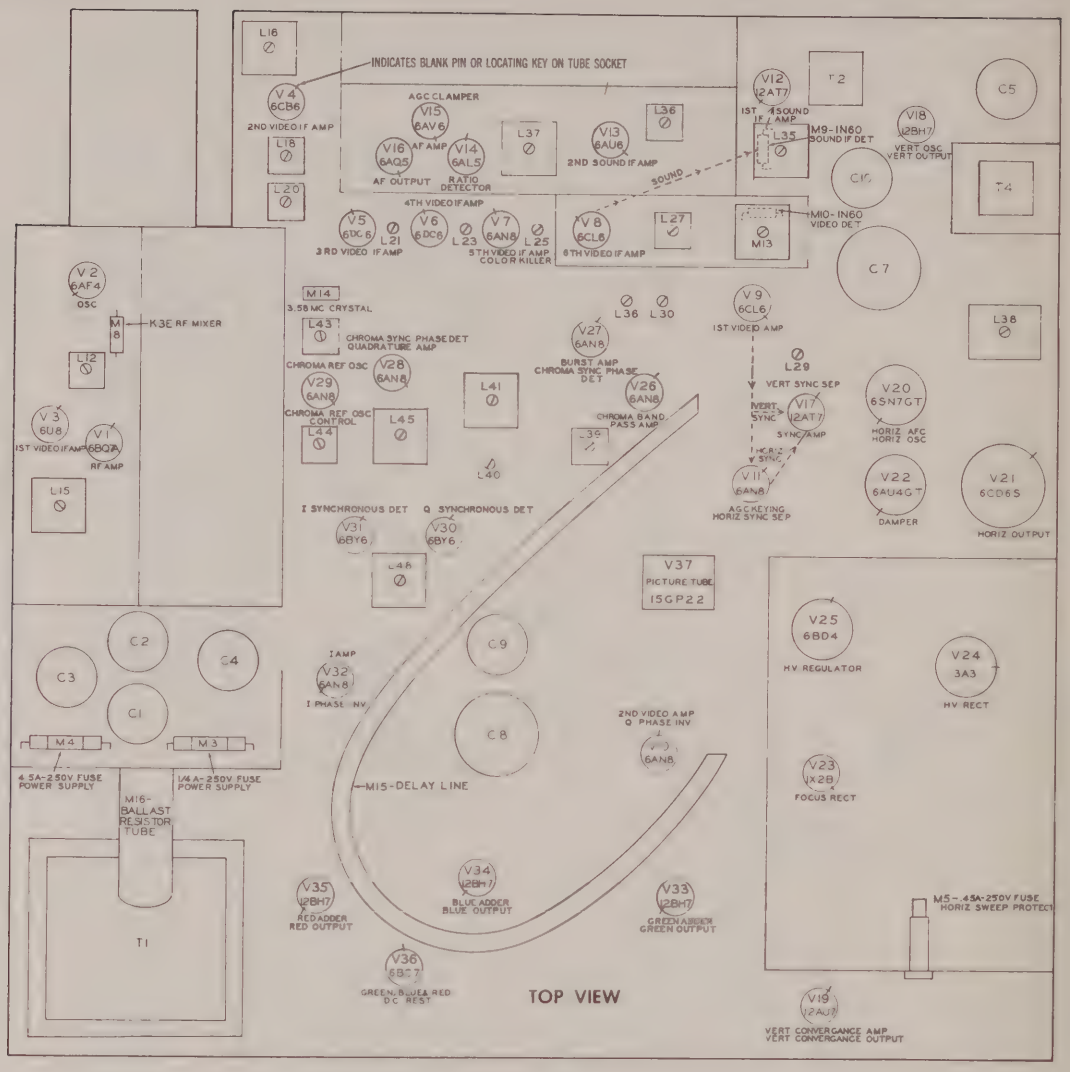


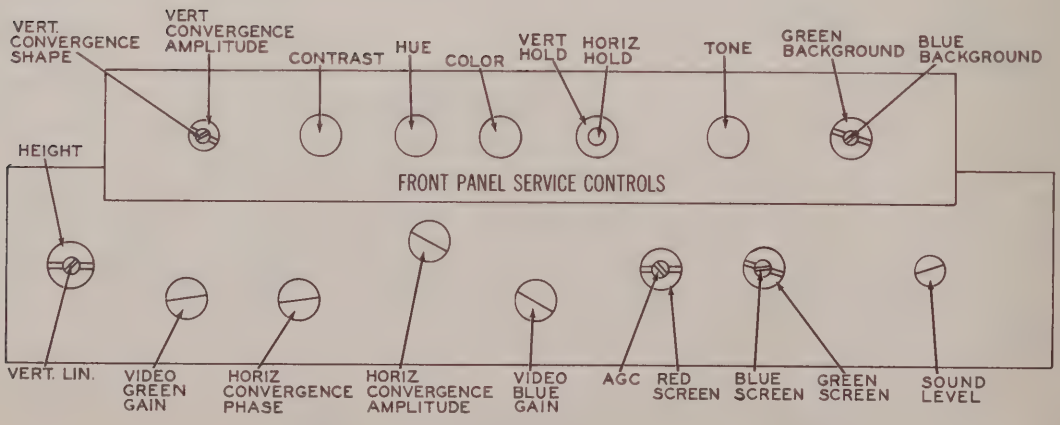


RCA VICTOR
MODEL CT-100 (Ch. CTC2)

SET 252 FOLDER 11

TUBE PLACEMENT CHART





MISCELLANEOUS ADJUSTMENTS

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ALIGNMENT – Turn the set on and tune in a TV station, preferably a test pattern. If necessary, synchronize the picture with the horizontal hold control (R10B).

(1) Preset the horizontal drive control (R21A) until the white foldover just disappears from the raster.
(2) Adjust the horizontal locking range trimmer (B1) one fourth turn from maximum clockwise position. Adjust the width coil slug (B2) until the adjusting screw is approximately 2/3 of the way out.
(3) Set the horizontal hold control to the center of its range.
(4) If necessary, adjust the horizontal frequency slug (B3) until the picture synchronizes horizontally.
(5) Connect the vertical amplifier of the oscilloscope to terminal "C" of L38. Adjust the horizontal waveform slug (B4) for response similar to Fig. 20. While adjusting B4 keep the picture in sync by readjusting the horizontal hold control. Remove the oscilloscope.
(6) Set the horizontal hold control to its maximum counter clockwise position.
Momentairly remove signal by switching off channel and back again. If picture remains in sync adjust B3 slightly and again switch off channel and back. If necessary, repeat this process until picture falls out of sync with diagonal bars sloping down to the left. Turn the horizontal hold control clockwise noting the least number of diagonal bars obtained just before the picture falls into sync. Adjust B1 slightly clockwise if more than three diagonal bars were present before picture pulled into sync. If less than two bars were present adjust B1 slightly counter clockwise.
(7) Turn the horizontal hold control fully counter clockwise and switch off channel and back again and recheck the number of bars present at the pull-in point (70 degrees clockwise rotation). Repeat the above procedure until 2 or 3 bars are present at the pull-in point.

HIGH VOLTAGE ADJUSTMENT

Turn the contrast control and brightness control to their maximum counter clockwise positions.
Connect the probe end of high voltage probe through a short length of high voltage anode lead to the corona cup on the base of the 3A3 (V24).
Set the meter for a 20KV reading. Set the high voltage control (R25A on rear of H. V. cage) for 19. 5KV on VTVM.
Turn contrast and brightness controls clockwise until picture appears on picture tube.
Adjust the focus control for best focus. Adjust convergence control for best convergence in the center portion of the picture tube.
Adjust the width coil slug (B2) for $\frac{1}{2}$ inch horizontal over scan of the viewing area. Turn the horizontal drive control clockwise as far as possible without the presence of white foldover lines in the raster. Recheck the operation of horizontal hold control for proper pull in action as outlined under "Horizontal oscillator alignment" (Steps 6 and 7)

HIGH VOLTAGE PERFORMANCE CHECK

Connect a 0-1 MA DC milliammeter in the cathode circuit (Pins 1 & 8) of the 6BD4 (V25). A reading of . 6 MA should be obtained when the high voltage is 19. 5KV. Remove milliammeter and high voltage probe.
Adjust the vertical height and vertical linearity controls so that after final adjustment a vertical overscan of 1/4 inch at top and bottom of viewing area is obtained.

COLOR AFC ALIGNMENT

Connect a 100% saturated color bar generator across the antenna terminals (a TV color signal may be used if available).

COLOR AFC ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
34.	Direct	Use color bar generator. Across antenna terminals.			Thru calibrated RF probe (wide band scope may be used in place of VTVM) to terminal "B" of L44. Common to chassis.	A35	Adjust for 5 volts peak to peak on VTVM (or scope).
35.	"	"			DC probe to pins 1 and 2 (plate and grid) of phase det. (6AN8 (V28). Common to chassis.	A36, A37.	Connect pin 8 (grid) of burst amp. (6AN8/V27) to chassis with short jumper. Adjust A36 for maximum deflection, then adjust A37 for MINIMUM deflection. Remove short from pin 8 of V27.
36.	"	"			"	A38, A39	Set the hue control to its mid-range position. Adjust for maximum deflection. A39 will tune very broadly. Adjust A39 near the approximate center of the range at which maximum deflection occurs.
	NOTE: The burst signal should be check at this point. Connect the vertical amplifier of the wide band scope to pins 1 and 2 (plate and grid) of 6AN8 (V28). Check for burst signal waveform similar to Fig. 21. Rotation of horizontal hold control throughout its holding range should not alter waveform shape.						
37.	Direct	Couple color bar generator across antenna terminals.			DC probe to pins 1 and 2 (plate and grid) of 6AN8 (V28). Common to chassis.	A40	Connect point Ⓜ to chassis, with short jumper. Adjust A40 for zero beat (indicated by slow swing of VTVM pointer. Zero beat may also be observed on scope or picture tube screen). Remove short from point Ⓜ .
38.	"	"			DC probe to point Ⓜ . Common to chassis.		Shunt 3. 58MC crystal (M14) with 15MMF capacitor. Adjust AFC balance control (R20A)for zero reading on VTVM. Remove 15MMF capacitor across M14.

HORIZONTAL DYNAMIC CONVERGENCE CIRCUIT ALIGNMENT

Clip the scope probe on the insulated lead to pin 13 (convergence anode) of the picture tube socket.
Turn the vertical convergence amplitude control to its maximum counter clockwise position. Set the vertical convergence shape control to its midrange position. Turn the horizontal convergence amplitude control to its maximum clockwise position.
Adjust the horizontal convergence phase control slug, A41, for maximum sine wave amplitude similar to Fig. 22. Turn the horizontal convergence amplitude control to its maximum counter clockwise position. aAdjust the horizontal dynamic convergence slug, A42, for correct phasing of minimum waveform with horizontal pulse on top of sinc wave as in Fig. 23.
Turn horizontal convergence amplitude control fully clockwise and adjust A41 for waveform similar to Fig. 23. Return horizontal convergence amplitude control to its maximum counter clockwise position.

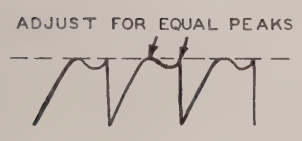


FIG. 20

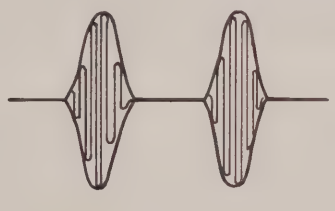


FIG. 21

FIG. 22

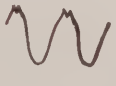


FIG. 23

MISCELLANEOUS ADJUSTMENTS CONT'D

VERTICAL DYNAMIC CONVERGENCE ALIGNMENT
Connect the vertical amplifier of oscilloscope to pin 1 (plate) of 12AU7 (V19). Low side to chassis. Adjust the vertical convergence amplitude control and the vertical convergence shape control for waveform similar to Fig. 24.
Connect the scope probe through a high voltage capacitor (500MMF/20KV) to pin 6 (focus anode) of picture tube. Check for waveform similar to Fig. 25.
Turn the vertical convergence amplitude control fully counter clockwise. Remove scope probe and high voltage capacitor from pin 6 of picture tube.
Remove short from picture tube grids. Remove color bar generator.

FIG.24

FIG.25

ALTERNATE ON THE AIR MATRIX ALIGNMENT USING 100% SATURATED COLOR BAR SIGNAL
Connect a 100% saturated color bar gen. to antenna terminals or tune in a station broadcasting an NTSC color bar sig.
Adjust contrast and color saturation controls to their mid-range positions.
Connect the vertical amplifier of scope to point (J). Low side to chassis.
Observe the + "I" signal on the scope.
Adjust the hue control to place the "Q" bar on the zero axis. Move the high side of scope to point (K) and observe the - "Q" signal on scope.
Adjust A37 to place the "I" bar on the zero axis.
Connect vertical amplifier of scope to blue grid of picture tube. Low side to chassis.
Adjust color saturation control for maximum cancellation of green and yellow bars (zero base line).
Adjust "I" gain control (R19A) for maximum cancellation of red.
Repeat procedure for green, yellow and red to obtain best cancellation.
Move high side of scope to green grid of picture tube and check cancellation of red, magenta and blue bars.
Move high side of scope to red grid of picture tube and check cancellation of green, blue and cyan bars.
If necessary repeat matrix adjustments until best overall cancellation is obtained.

COMPLETE SET-UP PROCEDURE

Before making any picture tube adjustments the "High Voltage Adjustments" under "Horizontal Sweep Circuit Alignment" should be made.

COLOR PURITY ADJUSTMENTS
Turn contrast control to its maximum counter clockwise position. Adjust the brightness control for average brightness.
Set the red screen control fully clockwise and the blue screen and green screen controls fully counter clockwise.
Remove the field neutralizing coil (T9) plug from its socket or set the field neutralizing control (R18) to its mid-range position.
Purity adjustments can best be observed by producing a small central area on the raster. To produce this area loosen the four screws at the top of the yoke cradle and slide the yoke and cradle approximately one inch toward the rear of the picture tube until a multi-color raster is seen. The red area will be in the center of the raster and appear to cover about 1/3 of the raster area.
This arrangement permits minimum purity coil correction.
Alternately adjust the purity coil (T8) and the purifying control (R17A) to give best red rendition at the central portion of the raster.
T8 is adjusted by grasping the edge at the front of the neck shield and turning it about the neck of the picture tube. Final adjustment position of R17A should be as near as possible to its maximum counter clockwise position. This final adjustment position of R17A permits a minimum of current through the coil resulting in a weaker magnetic field. This weaker magnetic field is desirable since it will have less interaction with other magnetic field about the picture tube. Slide the yoke in a forward direction until an all red raster is obtained. Check to see that the grounding springs on the yoke bracket are contacting the picture tube shield. Replace the field neutralizing coil (T9) plug in its socket. Adjust the field neutralizing control (R18) for best raster edge purity. If adjustment of deflection yoke affected the purity, slightly readjust T8 and R17A. Since purifying coil adjustments will affect centering, it may be necessary to re-set the centering controls.
Generally, the green and blue field will be satisfactory if good red field purity is obtained.
Turn the red screen control fully counter clockwise and the green screen control fully clockwise. Check the green field purity. Turn the green screen control fully counter clockwise and the blue screen control fully clockwise. Check the blue field purity .
If either field or both fields are not satisfactory a compromise setting of T8 and R17A must be reached for all three fields. If necessary, make slight readjustments to give best simultaneous red, green and blue fields.
Turn the brightness control fully clockwise. Turn red, blue and green screen controls clockwise to give the best low level grey raster.
Should color shading occur in one or more hues, either the screen controls for those hues must be turned down or those which do not give shading must be turned up.

INITIAL ADJUSTMENTS
Tune in a TV station, preferably a test pattern. It should be possible to sync the picture if the horizontal oscillator and AGC system are operating normally. If the picture will not sync or if the picture is overloading due to misadjusted AGC control it will be necessary to readjust the AGC control.
Remove the metal control cover box and snap-in cabinet panel below-cover box. Remove the 4 knobs under the control cover and the two round head screws holding the cover box in place.
Carefully remove the cover box by sliding the assembly outward. Remove the cabinet panel by pulling the panel free from its snap mounts.
The AGC control adjustment is not accessible. Do not attempt adjustment of the other accessible controls at this time.
Turn AGC control counter clockwise until normal receiver operation is obtained and the picture can be synchronized.
Adjust the convergence control for minimum color fringing around objects in the center of the picture.
Adjust the focus control for best definition.

CHECK OF HORIZONTAL OSCILLATOR ALIGNMENT
Turn the horizontal hold control fully counter clockwise. The picture should not lose sync.
Momentairly remove signal by switching off channel and back again. Normally the picture will lose sync. Slowly turn the horizontal hold in a clockwise direction. The picture should pull into sync before the horizontal hold control has been turned 70 degrees and should remain in sync throughout the balance of additional clockwise rotation of the control.
If the receiver passes the above checks and the picture remains normal and steady, the horizontal oscillator is properly aligned. If the receiver does not pass the above checks see "Horizontal Oscillator Alignment" under "Horizontal Sweep Circuit Adjustments".

MISCELLANEOUS ADJUSTMENTS CONT'D

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CENTERING ADJUSTMENT
Adjust the vertical and horizontal centering controls (rear panel) until the picture is centered within the picture tube mask. If the picture does not cover the masked area adjust the positioning for equal blank areas at top and bottom and each side of picture.

WIDTH AND HORIZONTAL DRIVE ADJUSTMENTS
Adjust the horizontal drive control (R21A) until the vertical white fold-over line just disappears.
Adjust the width coil slug (B2) for an overscan of approximately 1/4 inch on each side.
Turn the horizontal drive control (R21A) clockwise as far as possible without the presence of a vertical white fold-over line appearing in the picture.
If the picture mask cannot be filled by the above adjustments refer to the procedure outlined under "High Voltage Adjustment". If set has horizontal linearity coil, adjust its slug (B5) for maximum inductance (core all way in).

HEIGHT AND VERTICAL LINEARITY ADJUSTMENTS
Adjust the height and vertical linearity controls (front panel) for a picture that is symmetrical from top to bottom. Final adjustment should overscan the picture mask by 1/4 inch at top and bottom. Recheck horizontal and vertical centering of the picture.

DC CONVERGENCE ADJUSTMENTS
Connect the RF output of a white dot generator across the antenna terminals.
Adjust the DC convergence control until the three dots are positioned in a triangular pattern in the center of the raster. (It is possible to invert the dot triangle by turning the DC convergence control, from one extreme to the other).
If necessary the focus control should be readjusted.
If the dot group cannot be made to form an equilateral triangle similar to Fig. 26, adjust the beam positioning magnets on the neck of the picture tube.
Note which of the three dots requires positioning then adjust positioning magnet (small threaded screw with knurled nut) corresponding to that color to correct the position of that dot.
In Fig. 26 the dashed lines indicate the direction of dot movement due to DC convergence control adjustment. All three dots move simultaneously when the control is adjusted.
The solid lines indicate the direction of dot movement when the associated beam positioning magnet is adjusted. Each magnet has a slight effect on the two beams other than the one it is intended to control. For this reason minimum adjustment of the magnet is essential. Also minimum adjustment causes the least amount of de-focusing. Minimum adjustment is that point nearest the extreme counter clockwise. position where correct beam positioning is obtained.
If the indications are that only one dot is out of line and the associated magnet has insufficient range of adjustment remove the magnet from the neck shield and re-insert the opposite end of the magnet in the neck shield. Each magnet is slotted on both ends but only one end of each magnet is color coded in red. If reversal of a magnet cannot correct a single dot position return the magnet to its original position. Then the position of the opposite two dots may be corrected with respect to the first dot by adjusting the magnet associated with those dots.
After-obtaining the equilateral triangle, satisfactory convergence will be possible by adjustment of the DC convergence control.
Complete convergence should be obtained at the center of the raster. Complete convergence is indicated when a single white dot with no color frenging around its edge is obtained.

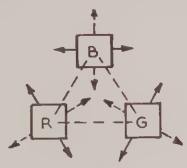


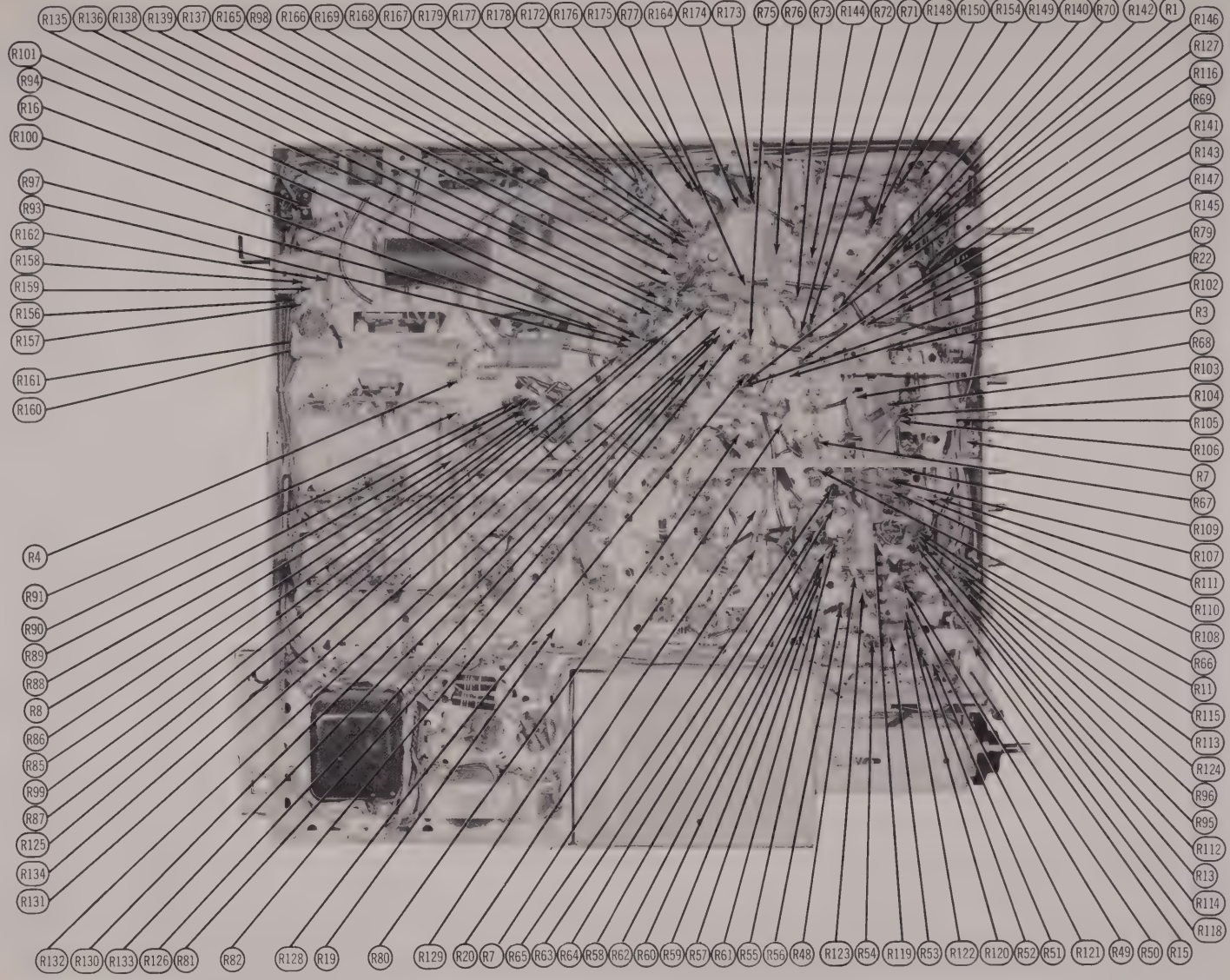
FIG. 26

DYNAMIC CONVERGENCE ADJUSTMENTS
Leave the white dot generator connected as under "DC Convergence Adjustments".
During adjustment of dynamic convergence, it may be helpful to frequently vary the DC convergence control to obtain best convergence on various parts of the screen.
Adjust the vertical convergence amplitude control so that the dots along a vertical center line show equal dot displacement from top to bottom of center line. Readjust focus control. If equal dot displacement does not occur on the vertical center line adjust the vertical convergence shape control to obtain the most uniform dot displacement.
If necessary, readjust the vertical convergence amplitude control. Readjust the DC convergence control so that the dots in the vertical lines converge. The dots should be kept in focus.
If necessary, slightly readjust the vertical amplitude and shaping controls to obtain the best top-to-bottom convergence .
The horizontal dynamic convergence adjustments should be performed next.
Adjust the horizontal convergence amplitude control so that the dots along a horizontal center line show equal dot displacement from left to right on the center line.
If equal dot displacement does not occur on the horizontal center line adjust the horizontal convergence phase coil slug (A41) to obtain the most uniform dot displacement. If necessary, slightly readjust the horizontal amplitude control. Readjust the DC convergence control so that the dots in the horizontal line converge. The dots should be kept in focus.
If necessary, slightly readjust the horizontal amplitude control and the phase coil slug (A41) to obtain the best side to side convergence.
The entire picture area should now be properly converged. Misconvergence of any particular area that can be corrected by re-adjusting the DC convergence control indicates that the dynamic convergence adjustments are not at optimum setting.
The necessary touch-up adjustments should be made after determining what correction is needed. Color purity and convergence adjustments should be completed before proceeding with the following adjustments

LOWLIGHT, MID-RANGE, AND HIGHLIGHT ADJUSTMENTS
Connect the antenna to the receiver and tune in a black and white program or test pattern.

(A) Turn the color saturation and contrast controls fully counter clockwise. Turn the brightness control to its near maximum clockwise position. Alternately adjust the red, blue, and green screen controls for a light grey or low brightness white picture.
(B) Turn the contrast control to its approximate mid-range position. Adjust the green and blue video gain controls for a satisfactory white picture. Turn the brightness control counter clockwise until the picture becomes just visible.
Adjust the green and blue background controls for a grey picture.

Repeat steps (A) and (B) until satisfactory grey to white pictures are seen through all positions of the brightness controls.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION (1-179)

SET 252 FOLDER 11

PROPERTY OF
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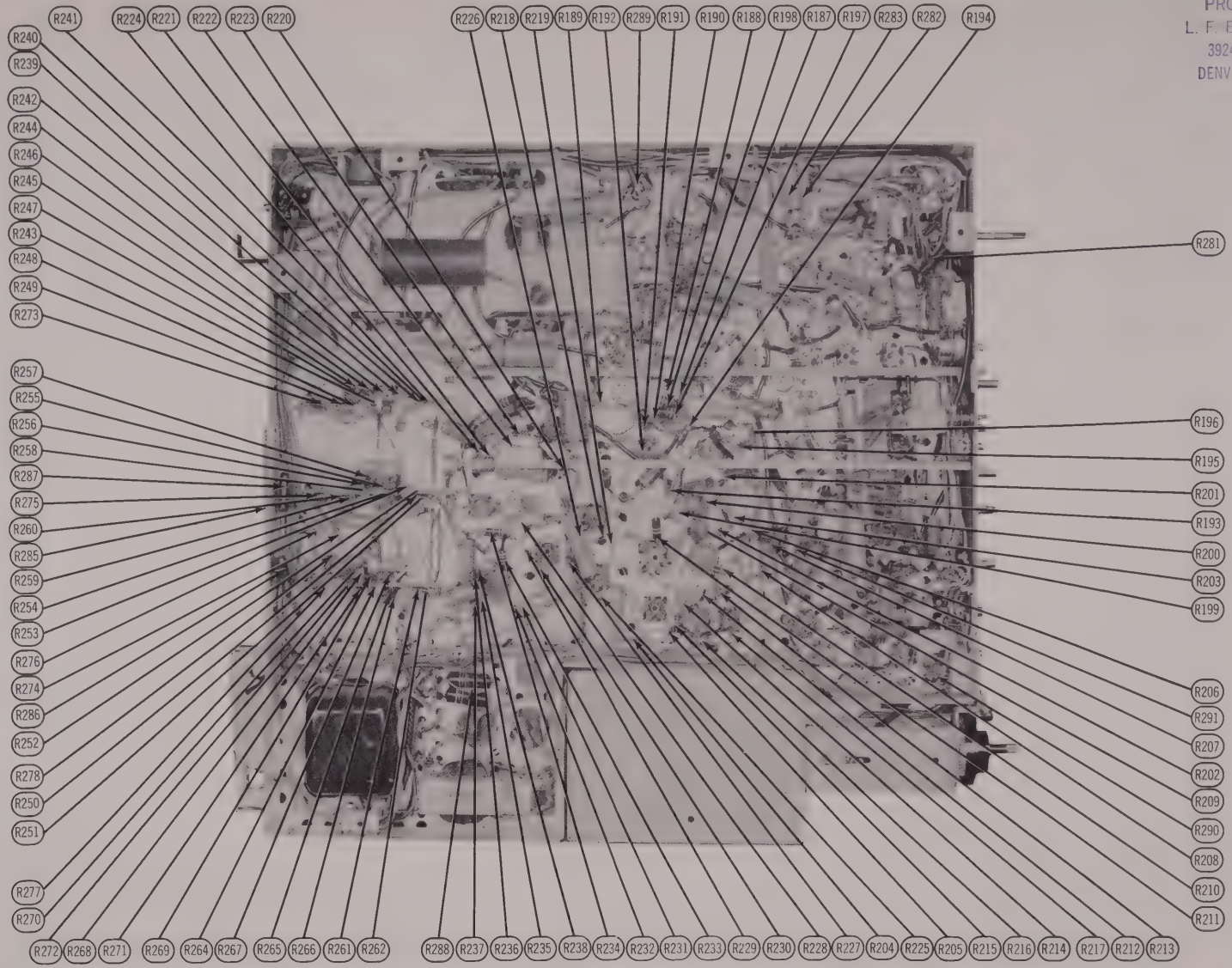
DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION (182-290)

RCA VICTOR
MODEL CT-100 (Ch. CTC2)

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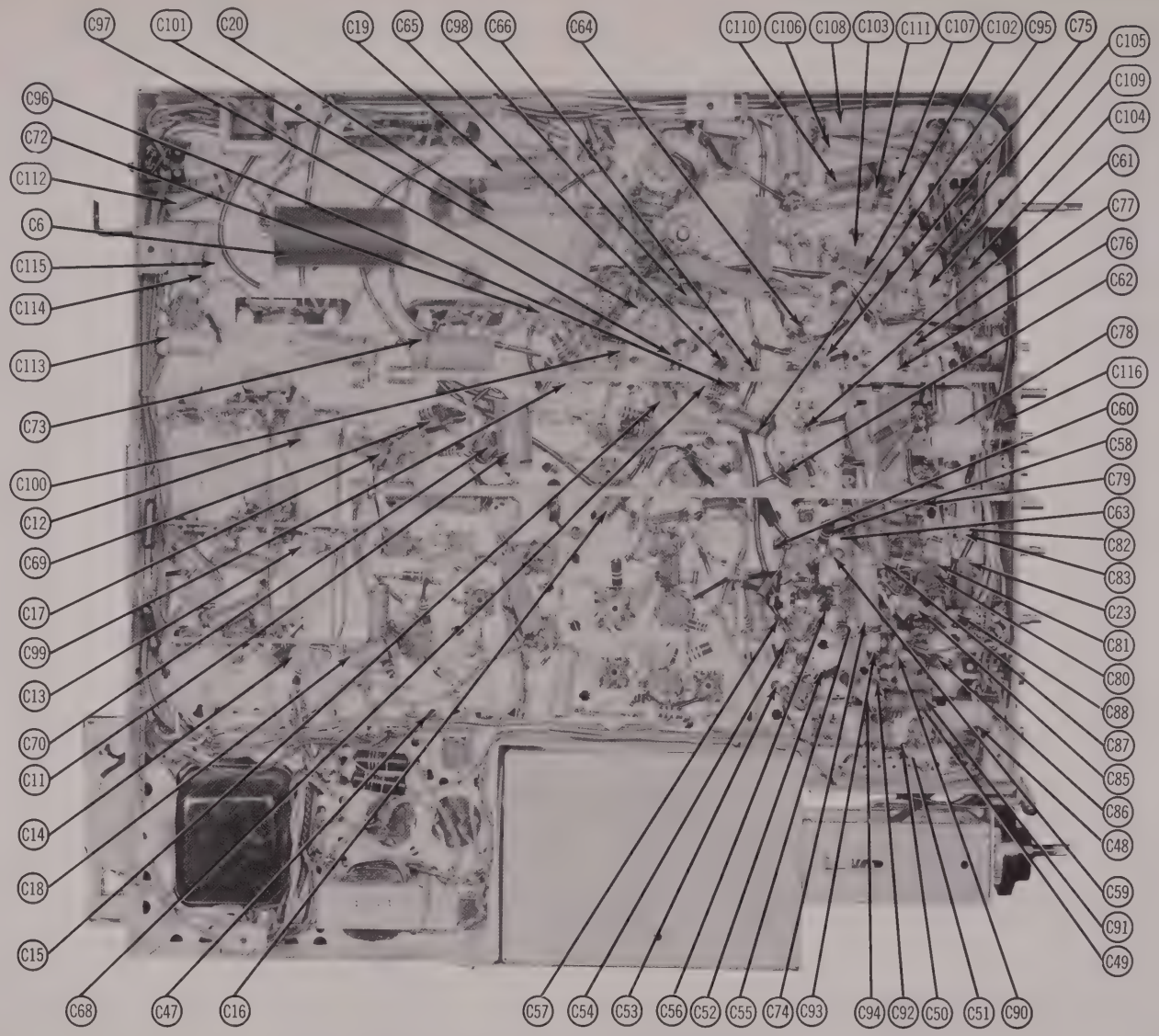

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION (6-116)

SET 252 FOLDER 11

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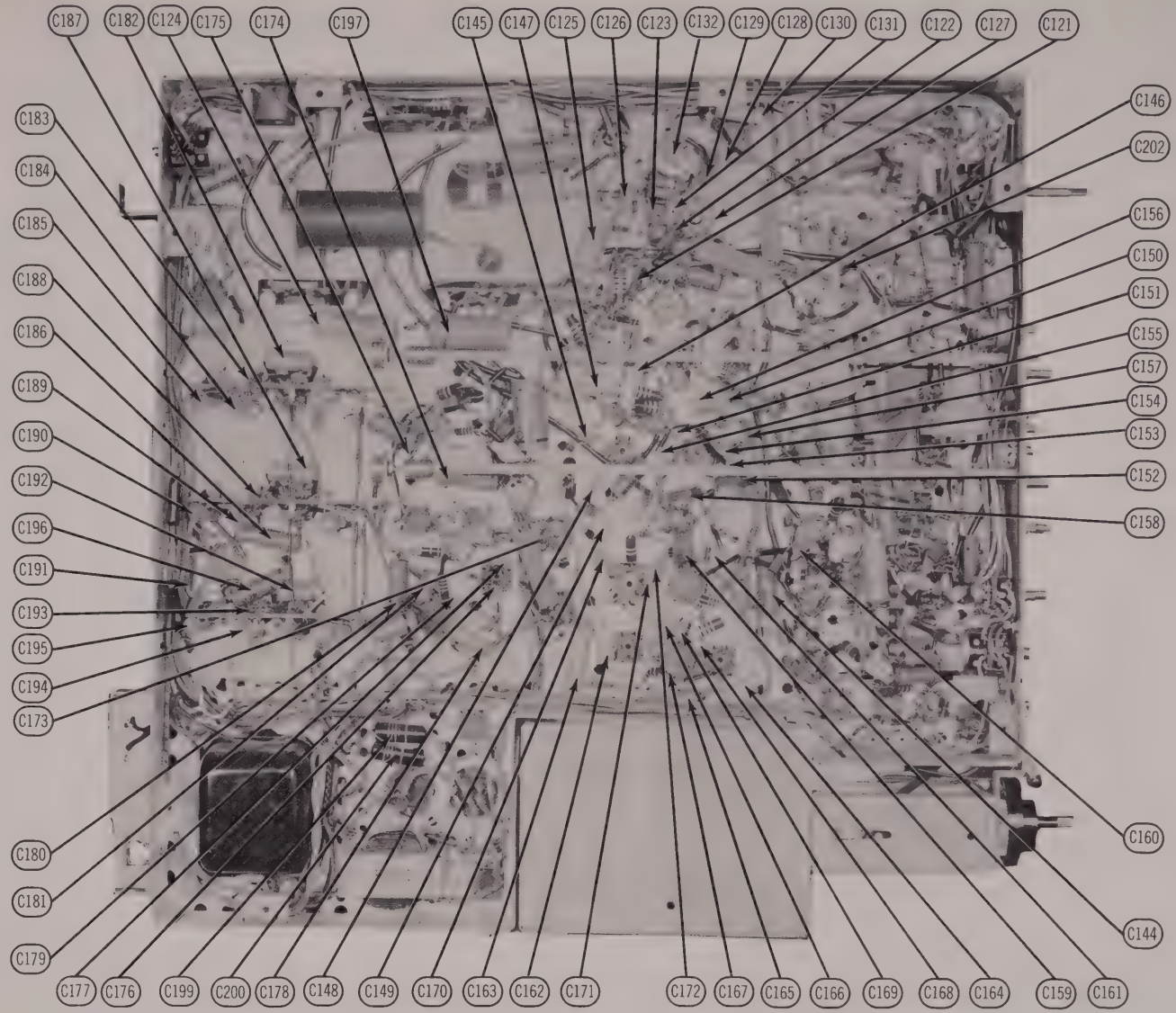

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION (121-202)

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

PROPERTY OF
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3924 MEADE ST
DENVER, COLORADO

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		RCA Victor PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BQ7A	6BQ7A	9AJ	
V2	Oscillator	6AF4	6AF4	7DK	
V3	1st Video IF Amp.	6U8	6U8		
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6DC6	6DC6	7CM	
V6	4th Video IF Amp.	6DC6	6DC6	7CM	
V7	5th Video IF Amp.- Color Killer	6AN8	6AN8	9DA	
V8	6th Video IF Amp.	6CL6	6CL6	6CL6	
V9	1st Video Amp.	6CL6	6CL6	6CL6	
V10	2nd Video Amp. - "Q" Phase Inv.	6AN8	6AN8	9DA	
V11	AGC Keying - Horiz. Sync Sep.	6AN8	6AN8	9DA	
V12	1st Sound IF Amp.	6AU6	6AU6	7BK	
V13	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V14	Ratio Detector	6AL5	6AL5	6BT	
V15	AF Amp. - AGC Clamper	6AV6	6AV6	7BT	
V16	AF Output	6AQ5	6AQ5	7BZ	
V17	Vert. Sync Sep. - Sync Amp.	12AT7	12AT7	9A	
V18	Vert. Osc. - Vert. Output	12BH7	12BH7	9A	
V19	Vert. Convergence Amp. - Vert. Convergence Output	12AU7	12AU7	9A	
V20	Horiz. AFC - Horiz. Osc.	6SN7GT	6SN7GT	8BD	
V21	Horiz. Output	6CD6G	6CD6G	5BT	
V22	Damper	6AU4GT	6AU4GT	4CG	
V23	Focus Rectifier	1X2B	1X2B	9Y	
V24	H. V. Rectifier	3A3	3A3		
V25	H. V. Regulator	6BD4	6BD4		
V26	Chroma Band-Pass Amplifier- Burst Amplifier Keying	6AN8	6AN8	9DA	
V27	Burst Amplifier - Chroma Sync Phase Detector	6AN8	6AN8	9DA	
V28	Chroma Sync Phase Detector- Quadrature Amplifier	6AN8	6AN8	9DA	
V29	Chroma Ref. Osc. Chroma Ref. Osc. Control	6AN8	6AN8	9DA	
V30	"Q" Synchronous Detector	6BY6	6BY6		
V31	"I" Synchronous Detector	6BY6	6BY6		
V32	"I" Amplifier - "I" Phase Inverter	6AN8	6AN8	9DA	
V33	Green Adder - Green Output	12BH7	12BH7	9A	
V34	Blue Adder - Blue Output	12BH7	12BH7	9A	
V35	Red Adder - Red Output	12BH7	12BH7	9A	
V36	Green, Blue & Red DC Restorer	6BC7	6BC7		

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA					RETMA BASE TYPE	NOTES
	RCA Victor PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.		
V37	15GP22	15HP22	15GP22	15GP22			

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	200	250	78957					FP331.3	TVL-1542	
C2	200	250	78957					FP331.3	TVL-1542	
C3	80	450	18950	AFH1-55		A051		FP149	TVL-1735	
C4	80	450	18950	AFH1-55		A051		FP149	TVL-1735	
C5A	▲10	450	78929	AFH3-125		C091		FP345.2	TVL-3731	
B	■10	450								
C	20	25								
C6	1000	3	72611			B002			TVL-1040	Note 1
C7A	■10	450	78931			D051		FP433	TVL-4717	
B	60	25								
C	▲10	450								
D	▲20	150								
C8A	100	50	78946			D053		FP437	TVL-4740	
B	▲20	450								
C	■20	450								
D	▲20	450								
C9A	■35	300	78930			A038 / BRH605		WP057 / TC78	TVL-2552	
B	▲500	6								
C10A	▲500	6	78930			A038 / BRH605		WP057 / TC78	TVL-2552	
B	■35	300								
C11	15	450	78917	PRS450/16		BR1645		TC74	TVA-1708	
C12	4	350	78919	PRS350/4		BR435		TC60	TVA-1601	
C13	4	350	78919	PRS350/4		BR435		TC60	TVA-1601	
C14	4	350	78919	PRS350/4		BR435		TC60	TVA-1601	
C15	50	6	78573	PRS25/50		BBR50-6T		TC29	TVA-1100	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C16	2	50	79181	PRS150/4		BBR2-50T		TC302	TVA-1301	
C17	2	350	78920	PRS350/4		BR245		TC60	TVA-1701	
C18	2	350	78920	PRS350/4		BR245		TC60	TVA-1701	
C19	40	200	79040	PRS250/40		BR4025		TC58	TVA-1511	
C20	50	50	91392	PRS50/50		BR505		TC39	TVA-1308	
C21	20	50	78927	PRS50/20		BR205		TC36	TVA-1306	
C22	25	10	78924					TC36	TVA-1120	Note 1
								TC36 *		
C23	5	50	78943	PRS150/4		BR550		TC30	TVA-1303	
C24	56				TCN-56	TN16	N750L-560		5TCU-Q56	
C25	56				TCN-56	TN16	N750L-560		5TCU-Q56	
C26	1000		77615							
C27	680		77624	BPD-00068	D6-681	K065	801-681	UC-5368	5GA-T56	
C28	1000		77252							
C29	2		77210							
C30	6		74182							
C31	1000		77252	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C32	1000		77615							
C33	56		71924		TCN-56	TN16	N750L-560		5TCU-Q56	
C34	1000		77615							
C35A	2	}	77667							
B	22	}								
C36	1000		77615							
C37	22		77621							
C38	1000		77084	EF-001	MFT-1000				503C-D1	
C39	680		77624	BPD-00068	D6-681	K065	801-681	UC-5368	5GA-T68	
C40	.62		79166							
C41	1000		77615							
C42	680		77624	BPD-00068	D6-681	K065	801-681	UC-5368	5GA-T68	
C43	680		77624	BPD-00068	D6-681	K065	801-681	UC-5368	5GA-T68	
C44	680		77624	BPD-00068	D6-681	K065	801-681	UC-5368	5GA-T68	
C45	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C46	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C47	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C48	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C49	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C50	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C51	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C52	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C53	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C54	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C55	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C56	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C57	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C58	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C59	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C60	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C61	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C62	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C63	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C64	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C65	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C66	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C67	330	500	79191	1469-00035		5R5T33				
C68	33		70596	SI33NP0	TCZ-33	TZ18	NP0K-330	ZT-5433	5TCC-Q33	
C69	.1	400	78922							
C70	1000	500	39652	1464-001		1R5D1		MCB255	MS-21	
C71	470	1500	77673							
C72	0027	600	73599			PM6D27				
C73	.47	400	78977	P488-47		CUB4P47		PT4047	4TM-P47	
C74	.22	200	78905	P288-22		CUB2P22		PT4022	2TM-P22	
C75	1.5		78928	SI1.5NP0	TCZ-1.5	TZ04	NP0K-1R5	ZT-5515	5TCCB-V15	
C76	3300	500	39664			1R5D33				
C77	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C78	56		71924	SI56NP0	TCZ-56	TZ24	NP0L-560		5TCC-Q56	
C79A	10000	}	75877	BPD-2X01	DD3-103	DK082	{811-01	DC-511 }	5HK-2S1	
B	10000	}					{811-01	DC-511 }		
C80	390	500	98414	1469-0004		5R5T39		MCB243	MS-34	
C81	390	500	98414	1469-0004		5R5T39		MCB243	MS-34	
C82	0022	600	73595	P688-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C83	01	400	73561	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C84	018	400	58476			PM4S18				
C85	01	400	73561	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C86	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C87	.1	400	73551	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C88	0039	400	78221	1464-004		1R5D39		MCB463	MS-24	
C89	270	500	39638	1469-0003		22R5T27		MCB241	MS-33	
C90	01	400	73594	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C91	0022	1600	73817	P1688-0022	DD30-222	CUB16D22		PT16222	MB-D22	
C92	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C93	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C94	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C95	027	400	73554			PM4S27				
C96	330	500	79191	1469-00035		5R5T33				
C97	01	400	73561	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C98	.1	400	73551	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C99	01	400	73561	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C100	0022	400	73595	P688-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C101	270		78916	SI270N750	TCN-270	TN32	N750-333-271			
C102A	01	}				{CUB6S1	GP2-333-103	PT611 }		
B	002	}				{CUB6D2	GP2-333-202	PT622 }		
C	005	}	♦79246	♦PA-111	♦PC-101	{CUB6D5	GP2-333-502	PT625 }	♦V-2	
D	005	}				{CUB6D5	GP2-333-502	PT625 }		
C103	0068	600	73807	P688-0068		CUB6D68		PT6268	6TM-D68	
C104	.1	400	73551	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C105	.22	400	78923	P488-22		CUB4P22		PT4022	4TM-P22	
C106	015	600	78978	P688-015		CUB6S15		PT6115	6TM-S15	
C107	001	1600	78980							
C108	.47	200	78977	P288-47		CUB2P47		PT4047	2TM-P47	
C109	.22	400	78923	P488-22		CUB4P22		PT4022	2TM-P22	
C110	.1	400	73551	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C111	2200	500	39660			1R5D22				
C112	.22	200	78905	P288-22		CUB2P22		PT4022	2TM-P22	
C113	.22	400	78923	P488-22		CUB4P22		PT4022	4TM-P22	
C114	0082	600	78979							
C115	01	400	73561	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C116	2700	500	39662							
C117	47	10000	79025							
C118	500	10000	79027							
C119	150	10000	79026							
C120	1200	15000	79024							
C121	470	500	39644	1469-0005		5R5T47			MS-35	
C122	82	1000	76474							
C123	.1	400	73551	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C124	01	400	73561	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C125	.47	200	73787	P288-47		CUB2P47		PT4047	2TM-P47	
C126	047	400	73553	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C127	82		71514							
C128	12		33380							
C129	330	1000	76476							
C130	01	600	73594							
C131	0015	1000	73802	P1088-0015						
C132	1000	500	39652	1464-001		1R5D1			MS-21	
C133	047	400	73553							
C134	.22	400	73794	P488-22		CUB4P22		PT4022	4TM-P22	
C135	.18	400	79041			PM4P18				
C136	022	600	73798	P688-022						
C137	1200	15000	79024							
C138	01	6000	78918	6089-01						
C139	500	30000	79008							
C140	.47	200	73787	P288-47		CUB2P47		PT4047	2TM-P47	
C141	.22	400	73794	P488-22		CUB4P22		PT4022	4TM-P22	
C142	1200	500	39654			1R5D12				
C143	.1	400	73551	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C144	.1	400	73551	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C145	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C146	47		78913	SI47NP0	TCZ-47	TZ22	NP0K-470	ZT-5447	5TCC-Q47	
C147	01	400	73561	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C148	33		70596	SI33NP0	TCZ-33	TZ18	NP0K-330	ZT-5433	5TCC-Q33	
C149	150		44704	SI150NP0	TCZ-150	TZ34	NP0-333-151	ZT-5315	5TCC-T15	
C150	3		78911	SI3NP0	TCZ-3	TZ06	NP0K-030	ZT-5533	5TCCB-V33	
C151	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C152	2000	500	39659	1464-002		1R5D2		MCB457	MS-22	
C153	15		45465	SI15NP0	TCZ-15	TZ11	NP0K-150	ZT-5415	5TCC-Q15	
C154	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C155	150		39652	SI150NP0	TCZ-151	TZ34	NP0-333-151	ZT-5315	5TCC-T15	
C156	047	400	78921							
C157	270	500	39638	1469-0003		22R5T27		MCB241	MS-33	
C158	2200	500	78901			1R5D22				
C159	2200	500	78901			1R5D22				
C160	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C161	01	400	73561	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C162	01	400	73561	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C163	.22	200	78905	P288-22		CUB2P22		PT4022	4TM-P22	
C164	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C165	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C166	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C167	2		99132	SI2NP0	TCZ-2	TZ05	NP0K-020		5TCCB-V22	
C168	2		99132	SI2NP0	TCZ-2	TZ05	NP0K-020		5TCCB-V22	
C169	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C170	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C171	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C172	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C173	22		33101	SI22NP0	TCZ-22	TZ14	NP0K-220	ZT-5422	5TCC-Q22	
C174	.1	400	73551	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C175	24		78915							
C176	4		78912	SI4NP0	TCZ-4		NP0K-040			
C177	100		39396	SI100N750	TCN-100	TN22	N7506-101	NT-531	5TCU-Q1	
C178	047	400	78921							
C179	18		39041							
C180	.1	400	73551	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C181	9		78914							
C182	.1	400	78922							
C183	470	500	76992	1469-0005		5R5T47			MS-35	
C184	.1	400	78922							
C185	047	400	78921							
C186	.1	400	73551							
C187	.1	400	78922							
C188	470	500	76992	1469-0005		5R5T47			MS-35	
C189	.1	400	78922							
C190	047	400	78921							
C191	.1	400	73551							
C192	.1	400	78922							
C193	470	500	76992	1469-0005		5R5T47			MS-35	
C194	.1	400	78922							
C195	047	400	78921							
C196	.1	400	73551							
C197	.22	400	74957	P488-22		CUB4P22		PT4022	4TM-P22	
C198	270									
C199	047	600	73592	689ZX-05		CUB6S47		PT6147	6TM-S47	
C200	047	600	73592	689ZX-05		CUB6S47		PT6147	6TM-S47	
C201	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	
C202	820		78944	BPD-001	DD-102	K067	801-001	DC-521	5HK-D1	

Note 1 Non-Polarized Unit.
* Connect Negative Leads Of TC36 Together. Connect Positive Leads to Original Circuit Points.
♦ Items C102A, C102B, C102C, C102D, R140A, R140B, R140C, R140D Are Combined In One Unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5000Ω	2	78940	*QJ-555			WF53	Brightness (Panel) Wire Wound
B	1 Meg	½					UR16-T25	Volume Tapped at 180KΩ(Rear)
C	Switch						DS-26	Attach to R1B
R2A	5 Meg	½	78937	**QJ-554				Vert. Convergence Amplitude (Panel)
B	5 Meg	½						Vert. Convergence Shape (Rear)

PROPERTY OF
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3924 MEADE ST.
DENVER, COLORADO

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PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS (cont)

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R3A	1 Meg		78936	4QU-553			UF16L	Height (Panel)
B	5000Ω						UR53L	Vert Linearity (Rear)
R4A	10kΩ		78949		A47-10K-S	AB-14		Video Green Gain
B	Shaft		Not Req.		RS-2	AK-9		Attach to R4A
R5	500Ω		78948					Contrast See Note
R6A	1500Ω		78956	Q11-109		B-5		Contrast See Note
B	Shaft			C3		AK-16	U-7	Attach to R6A
R7	2500Ω		78942	Q17-111				Horiz. Convergence Amplitude
R8A	10kΩ		78949		A47-10K-S	AB-14		Video Blue Gain
B	Shaft		Not Req.		RS-2	AK-9		Attach to R8A
R9A	500Ω		78951	Q11-103	A47-500-S	B-4		Color Saturation
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.		Attach to R9A
R10A	1 Meg		78934	4QU-552			UF16L	Vert. Hold (Panel)
B	500kΩ						UR54L	Horiz. Hold (Rear)
R11A	15kΩ	2	78938					Red Screen Wire Wound (Panel)
B	500kΩ							AGC (Rear)
R12A	2. 5Meg		78941	Q11 239	A47-2.5Meg-S	B-83	U255	Tone
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R12A
R13A	15kΩ	2	78939					Green Screen Wire Wound (Panel),
B	15kΩ	2						Blue Screen Wire Wound (Rear)
R14A	10kΩ	2	78935					Green Background Wire Wound (Panel)
B	10kΩ	2						Blue Background Wire Wound (Rear)
R15A	750Ω		78933			AB-5		Sound Level
B	Shaft		Not Req.			AK-1		Attach to R15A
R16A	500Ω	2	78953					Vert. Centering Wire Wound
B	500Ω	2						Vert, Centering Wire Wound
R17A	20Ω	2	78955	W-20	A43-20		R20L	Cross Purity Wire Wound
B	Shaft		Not Req.	Not Req.	FKS-1/4		R30CT	Attach to R17A
R18	30Ω	2	78954	W30X15	RTV-15	SVT-902		Field Neutralization Wire Wound Tapped at 15Ω
R19A	500Ω		78951	Q11-103	A47-500-S	B-4		I-Gain
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.		Attach to R19A
R20A	250kΩ		78952	Q11-130	A47-250K-S	AB-40	U-56	AFC Balance
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R20A
R21A	100kΩ		78950	Q11-128	A47-100K-S	AB-40	U-41	Horiz. Drive
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R21A
R22	750Ω		78933				U-67	Sound Reject
R23A	5 Meg		78028		A47 5Meg-S		Not Req.	Focus
B	Shaft		Not Req.		FS-3			Attach to R23A
R24	15 Meg		79039					DC Convergence
R25A	1 Meg		79030	Q11-137	A47-1Meg-S	AB-89	SU-54	High Voltage
B	Shaft		Not Req.	SQ	FKS-1/4	AK-1	Not Req.	Attach to R25A
R26	80Ω	2	79031		RTV-339			Horiz. Centering Tapped at 40Ω (Wire Wound)

Note: R5 and R6A are ganged with one shaft.
* CONCENTRIKIT EQUIVALENT KIT K-3, BASE ELEMENTS & SHAFTS, W11-114 & P3-118 (Panel), B13-137X & R1-207 (Rear) and SWITCH 76 I.
** CONCENTRIKIT EQUIVALENT KIT K-5, BASE ELEMENTS & SHAFTS, B11-141 & P11-018 (Panel), B11-141 & R15-014 (Rear).
• CONCENTRIKIT EQUIVALENT KIT K-1, BASE ELEMENTS & SHAFTS, B11-137 & P11-018 (Panel), B11-114 & R15-014 (Rear)
▲ CONCENTRIKIT EQUIVALENT KIT K-2, BASE ELEMENTS & SHAFTS, B11-137 & P9-104 (Panel), B11 123 & R11-112 (Rear)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R27	100kΩ	½		BTS-100K	
R28	100kΩ	½		BTS-100K	
R29	22kΩ	½		BTS-22K	
R30	120Ω	½		BTS-120	
R31	8. 2Meg	½			
R32	220kΩ	½		BTS-220K	
R33	470kΩ	½		BTS-470K	
R34	270kΩ	½		BTS-270K	
R35	1000Ω	½		BTS-1000	
R36	10kΩ	½		BTS-10K	
R37	47Ω	½		BTS-47	
R38	10kΩ	½		BTS-10K	
R39	1000Ω	½		BTS-1000	
R40	10kΩ	10		13/4A-10K	
R41	3. 9Meg	½			
R42	100Ω	½		BTS-100	
R43	100Ω	½		BTS-100	
R44	56Ω	½		BTS-56	
R45	4700Ω	½		BTS-4700	
R46	68Ω	½		BTS-68	
R47	12kΩ	½		BTS-12K	
R48	560kΩ	½		BTS-560K	
R49	180kΩ	½		BTS-180K 5%	
R50	330Ω 5%	1	502133	BTS-330 5%	
R51	1000Ω	1	503310	BTS-1000	
R52	621Ω 5%	½	3579		
R53	47kΩ	1	513347	BTA-47K	
R54	10kΩ	2	523310	BTB-10K	
R55	621Ω 5%	½	3579		
R56	10kΩ	2	523310	BTB-10K	
R57	220kΩ 5%	½	502422	BTS-220K 5%	
R58	27kΩ 5%	½	502327	BTS-27K 5%	
R59	22kΩ 5%	½	502322	BTS-22K 5%	
R60	621Ω 5%	½	3579		
R61	10kΩ	2	523310	BTB-10K	
R62	1. 2Meg	½	503512	BTS-1. 2Meg	
R63	27kΩ 5%	½	502327	BTS-27K 5%	
R64	180Ω 5%	½		BTS-180 5%	
R65	10kΩ	2	523310	BTB-10K	
R66	2700Ω	½	502227	BTS-2700	
R67	120Ω 5%	½	502112	BTS-120 5%	
R68	2200Ω	½	78908		
R69	330Ω 5%	½	502133	BTS-330 5%	
R70	220kΩ 5%	½	502422	BTS-220K 5%	
R71	2200Ω 5%	½	502222	BTS-2200 5%	
R72	4700Ω 5%	½	502247	BTS-4700 5%	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R73	10kΩ	1	503310	BTS-10K	
R74	120Ω 5%	1	512112	BTA-120 5%	
R75	220Ω	1	503122	BTS-220	
R76	72. 5kΩ	10	79184		
R77	10kΩ	10	79182		
R78	100kΩ	½	503310	BTS-10K	
R79	27kΩ	½	503327	BTS-27K	
R80	10kΩ	½	503310	BTS-10K	
R81	3300Ω	½	523333	BTB-3300	
R82	2700Ω 5%	1	502227	BTA-2700 5%	
R83	1800Ω 5%	½	502218	BTS-1800 5%	
R84	2200Ω 5%	½	502222	BTS-2200 5%	
R85	2. 2Meg	½	503552	BTS-2. 2Meg	
R86	220Ω	½	503122	BTS-220	
R87	1500Ω	½	503315	BTS-1500	
R88	100Ω	½	503110	BTS-100	
R89	47kΩ	1	513347	BTA-47K	
R90	22kΩ	2	523322		
R91	22kΩ	½	503322	BTS-22K	
R92	10kΩ	1		BTA-10K	
R93	4. 7Meg	½	503547	BTS-4. 7Meg	
R94	2. 2Meg	½	503552	BTS-2. 2Meg	
R95	820kΩ 5%	½		BTS-820K 5%	
R96	470kΩ 5%	½		BTS-470K 5%	
R97	47kΩ	½	503347	BTS-47K	
R98	47kΩ	2	523347	BTB-47K	
R99	68kΩ	2	523368	BTB-68K	
R100	2200Ω	1	503322	BTS-2200	
R101	4. 7Meg	½	503547	BTS-4. 7Meg	
R102	82Ω 5%	½	502082	BTS-82 5%	
R103	22kΩ	2	523322	BTB-22K	
R104	22kΩ	2		BTB-22K	
R105	47kΩ	½	503347	BTS-47K	
R106	18kΩ	½	503318	BTS-18K	
R107	56kΩ	2	523356	BTB-56K	
R108	56kΩ	2	523356	BTB-56K	
R109	39kΩ	1		BTA-39K	
R110	47Ω 5%	½	502047	BTS-47 5%	
R111	39kΩ	½	503339	BTS-39K	
R112	1200Ω 5%	½	502212	BTS-1200 5%	
R113	1000Ω 5%	½	502210	BTS-1000 5%	
R114	10kΩ 5%	½	502310	BTS-10K 5%	
R115	10kΩ 5%	½	502310	BTS-10K 5%	
R116	1. 5Meg	½	503515	BTS-1. 5Meg	
R117	15kΩ	½	503515	BTS-15K	
R118	10Meg	½	503610	BTS-10Meg	

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R119	330kΩ	½	503433	BTS 330K	
R120	470kΩ	½	503447	BTS 470K	
R121	330Ω	2		BTB-330	
R122	330Ω	2		BTB-330	
R123	470Ω	2	533147	BTB-470	
R124	680kΩ	½	503468	BTS 680K	
R125	3900Ω	½	503239	BTS-3900	
R126	27kΩ	½	503327	BTS-27K	
R127	22kΩ	½	503322	BTS-22K	
R128	270kΩ	½	503427	BTS-270K	
R129	56kΩ	½	503356	BTS-56K	
R130	2. 2Meg	½	503552	BTS-2. 2Meg	
R131	820kΩ	½	503482	BTS-820K	
R132	47kΩ	½	503347	BTS-47K	
R133	560kΩ	½	503456	BTS-560K	
R134	47kΩ	½	503347	BTS-47K	
R135	33kΩ	2	523333	BTB-33K	
R136	18kΩ	½	503318	BTS-18K	
R137	8200Ω	½	503282	BTS-8200	
R138	33kΩ	½	503333	BTS-33K	
R139	22kΩ	½	503322	BTS-22K	
R140A	22kΩ	½		BTS-22K	
B	22kΩ	½		BTS-22K	
C	8200Ω	½	*79246	BTS-8200	
D	8200Ω	½		BTS 8200	
R141	1Meg	½	503510	BTS 1Meg	
R142	1Meg	½	503510	BTS-1Meg	
R143	1. 5Meg	½	503515	BTS-1. 5Meg	
R144	4700Ω	½	503247	BTS-4700	
R145	470Ω	½	503147	BTS-470	
R146	1Meg	½	503510	BTS-1Meg	
R147	18kΩ	½	219	BTS-18K	
R148	1Meg	½	503510	BTS 1Meg	
R149	5600Ω	2		BTB-5600	
R150	75kΩ 5%	½		BTS-75K 5%	
R151	1200Ω	1		BTA-1200 5%	
R152	7200Ω	1		BTA-1200 5%	
R153	680kΩ	½	503468	BTS-680K	
R154	10Meg	½	503610	BTS-10Meg	
R155	2. 7Meg	½	503527	BTS-2. 7Meg	
R156	1. 8Meg	½	503518	BTS-1. 8Meg	
R157	2700Ω	½	503227	BTS-2700	
R158	2700Ω	½	503227	BTS 2700	
R159	27kΩ	½		BTS 27K	
R160	4700Ω	½	503247	BTS-4700	
R161	1. 8Meg	½	503518	BTS-1. 8Meg	
R162	220kΩ	½	503422	BTS-220K	
R163	820kΩ	½	503482	BTS-820K	
R164	150kΩ	½	503415	BTS-150K	
R165	680kΩ	½	513468	BTA-680K	
R166	1M-g	½	503510	BTS-1Meg	
R167	150KΩ 5%	½	512415	BTA-150K 5%	
R168	82kΩ	½	513382	BTA-82K	
R169	3900Ω 5%	½	502239	BTS 3900 5%	
R170	56kΩ	½		BTA 56K	
R171	82kΩ	½		BTA-82K	
R172	100kΩ 5%	½	512410	BTA-100K 5%	
R173	8200Ω 5%	½	502282	BTS-8200 5%	
R174	68kΩ	½	503368	BTS-68K	
R175	10kΩ	½	503310	BTS 10K	
R176	47kΩ	½		BTS-47K	
R177	120Ω	½	503112	BTS-120	
R178	56Ω	½	503056	BTS-56	
R179	2200Ω	2	523322	BTB-2200	
R180	8. 2Meg	2	522583	BTB-8. 2Meg	
R181	4700Ω	1	513247	BTA-4700	
R182	4700Ω	1	513247	BTA-4700	
R183	1Meg	½	503510	BTS-1Meg	
R184	1. 8Meg	1	513518	BTA-1. 8Meg	
R185	50Meg 5%	3	78925		
R186	50Meg 5%	3	78926		
R187	150Ω	½	503115	BTS-150	
R188	56kΩ	½	503356	BTS-56K	
R189	10kΩ	½	503310	BTS-10K	
R190	39kΩ	1	513339	BTA-39K	
R191	10kΩ	1	513310	BTA-10K	
R192	2700Ω	1		BTA-2700	
R193	22kΩ	½	503322	BTS 22K	
R194	100kΩ	½	503410	BTS-100K	
R195	1800Ω 5%	½	512218	BTA-1800 5%	
R196	2200Ω 5%	½	502222	BTS-2200 5%	
R197	39kΩ 5%	½	522339	BTB-39K 5%	
R198	33kΩ 5%	½	38744	BTB-33K 5%	
R199	2200Ω	2	503222	BTS-2200	
R200	15kΩ	½	503315	BTS-15K	
R201	1Meg	½	503510	BTS-1Meg	
R202	1Meg	½	503510	BTS-1Meg	
R203	10kΩ	½	503310	BTS-10K	
R204	15kΩ	½	503315	BTS-15K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R205	100Ω	½	502210	BTS-1000	
R206	5. 6Meg	½	503556	BTS-5. 6Meg	
R207	100Meg	½	514710		
R208	27kΩ	½	503327	BTS-27K	
R209	180Ω	½	503118	BTS-180	
R210	47kΩ	½	513347	BTA-47K	
R211	10kΩ	2	523310	BTB 10K	
R212	150KΩ	½	503415	BTS-150K	
R213	39kΩ	2	523339	BTB-39K	
R214	330Ω 5%	½	502133	BTS-330 5%	
R215	12kΩ	½	513312	BTA-12K	
R216	27kΩ	2	523327	BTB-27K	
R217	2200Ω	½	503222	BTS-2200	
R218	100Ω	½	503110	BTS-100	
R219	56Ω	½	503056	BTS-56	
R220	18KΩ 5%	½	512318	BTA-18K 5%	
R221	390KΩ	½	503439	BTS-390K	
R222	6. 8Meg	½	503568	BTS-6. 8Meg	
R223	33KΩ ½%	½	38895	BTA 33K 5%	
R224	3000Ω 5%	½	19794		
R225	100Ω	½	503110	BTS-100	
R226	12. 5KΩ	10	79184		
R227	4700Ω 5%	½	502247	BTS-4700 5%	
R228	5000Ω			1 3/4A-5000	
R229	4700Ω 5%	½	502247	BTS-4700 5%	
R230	8200Ω	½	503282	BTS 8200	
R231	1Meg	½	503510	BTS-1Meg	
R232	100Ω	½	503110	BTS-100	
R233	47kΩ	½	513347	BTA-47K	
R234	4700Ω 5%	½	512247	BTA-4700 5%	
R235	3. 3Meg	½	503533	BTS-3. 3Meg	
R236	390kΩ	½	503439	BTS-390K	
R237	10kΩ 5%	2	522310	BTB-10K 5%	
R238	62000Ω 5%	½	35255		
R239	10kΩ 5%	½	502310	BTS-10K 5%	
R240	4700Ω 5%	½	502347	BTS-4700 5%	
R241	10kΩ 5%	½	502310	BTS-10K 5%	
R242	680Ω	½	503168	BTS-680	
R243	3300Ω 5%	½	30733	BTS-3300 5%	
R244	10kΩ 5%	2	522310	BTB-10K 5%	
R245	1. 8Meg	½	503518	BTS-1. 8Meg	
R246	270Ω 5%	½	30929	BTS-270 5%	
R247	180Ω 5%	½	502118	BTS-180 5%	
R248	4700Ω 5%	2	522447	BTB-4700 5%	
R249	15kΩ	½	503315	BTS-15K	
R250	10kΩ 5%	½	502310	BTS-10K 5%	
R251	10kΩ 5%	½	502310	BTS-10K 5%	
R252	10kΩ 5%	2	502310	BTS-10K 5%	
R253	680Ω	½	503168	BTS-680	
R254	3300Ω 5%	½	30733	BTS-3300 5%	
R255	10kΩ 5%	2	522310	BTB-10K 5%	
R256	1. 8Meg	½	503568	BTS-1. 8Meg	
R257	270Ω 5%	½	30929	BTS-270 5%	
R258	180Ω 5%	½	502118	BTS-180 5%	
R259	4700Ω 5%	2	522247	BTB-4700 5%	
R260	15kΩ	½	503315	BTS-15K	
R261	10kΩ 5%	½	502310	BTS-10K 5%	
R262	10kΩ 5%	½	502310	BTS-10K 5%	
R263	30kΩ 5%	½	502330		
R264	3300Ω 5%	½	30733	BTS-3300 5%	
R265	120Ω 5%	1	512112	BTA-120 5%	
R266	82Ω 5%	½	502082	BTS-82 5%	
R267	10kΩ 5%	2	522310	BTB-10K 5%	
R268	1. 8Meg	½	503568	BTS-1. 8Meg	
R269	270Ω 5%	½	30929	BTS-270 5%	
R270	180Ω 5%	½	502118	BTS-180 5%	
R271	4700Ω 5%	2	522247	BTB-4700 5%	
R272	15kΩ	½	502315	BTS-15K	
R273	100kΩ	½	503410	BTS-100K	
R274	1Meg	½	503510	BTS-1Meg	
R275	100kΩ	½	503410	BTS-100K	
R276	1Meg	½	503510	BTS-1Meg	
R277	100kΩ	½	503410	BTS-100K	
R278	1Meg	½	503510	BTS-1Meg	
R279	8200Ω	2	76504	BTB-8200	
R280	8200Ω	2	76504	BTB-8200	
R281	8200Ω	2	76504	BTB 8200	
R282	1800Ω	2	78932	BTB-1800	
R283	4000Ω	5	78907		
R284	2700Ω	½		BTS-2700	
R285	33Ω	30			
R286	100Ω	10		13/4A-100	
R287	100Ω	10		13/4A-100	
R288	56kΩ	½	503356	BTS-56K	
R289	12Ω	2			
R290	560Ω 5%	½	5164	BTS-560 5%	
R291	10Ω	½		BTS-10	
R292	56K	½		BTS-56K	
R293	8200Ω	2		BTB-8200	

• Items R140A, R140B, R140C, R140D, C102A, C102B, C102C, C102D are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA RCA Victor PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC	174VAC @2.5VAC	6. 3VAC @1. 0A	78893						
	@4. 4A									
	SEC. 3	SEC. 4	SEC. 5							
	6. 3VAC @17. 6A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	RCA Victor PART No	Stancor PART No	Merit PART No	Triad PART No	RCA TYPE No	Halldorson PART No	Thordarson PART No
T2	Vert. Osc. Trans.	74144	A-8122	A-4003	A 97Y		B6701	24A88 I
T3	Horiz. Output Trans.	79012 ⑤						FLY-100
T4	Vert. Output Trans.	77823	A-8145	A-3038 ②	A-107X ②		Z1802 ②	26S53 ②
T5A	Yoke - Horiz. (13MH)	79116 ③						
B	Vert. (100MH)							
T6	Horiz. Linearity (2. 7-18MH)	76441			WC-12 ③			WC-19
T7	Width (16. 75MH)	79010		MWC-3				WC-19.4
T8	Purity Coil	79126						
T9	Field Neutralizing Coil	79119						
T10	Horiz. Dynamic Convergence Phase Coil (10-48MH)	78998						
T11	Horiz. Dynamic Convergence Output Transformer	79009						
T12	Vert. Dynamic Convergence Output Transformer	79006						
T13	Vert. Centering Coil	78900						

① Drill New Mounting holes.
② Drill One New Mounting Hole
③ Connect To Coded Red And Blue Terminals.
④ Drill New Mounting Hole.
⑤ Includes Male Plug And C198, R150, R151
⑥ Includes R181.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI.	IMPEDANCE SEC.	RCA Victor PART No	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No	Thordarson PART No	NOTES
T14	5. 2kΩ	4Ω	Part of Speaker	A-3823	A-3019	S-5Z	Z1002	25S49	

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	RCA Victor PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP-1	8"	PM	4Ω	77129	ST-115 Mod. P8-V	8A21	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	RCA Victor PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	IF Trap	0Ω		77626				
L2	IF Trap	0Ω		77628				
L3A	VHF Ant., RF, Mixer & Osc. Coils	0Ω		77602				Channels 2-4; Includes Capacitors
B	VHF Ant., RF, Mixer & Osc. Coils	0Ω		77603				Channels 5-6; Includes Capacitors
C	VHF Ant., RF, Mixer & Osc. Coils	0Ω		77604				Channels 7-10; Includes Capacitors
D	VHF Ant., RF, Mixer & Osc. Coils	0Ω		77605				Channels 11-13, Includes Capacitors
E	UHF Ant., RF, Mixer & Osc. Coils	0Ω						Channels 14-52; Includes Capacitors
F	UHF Ant., RF, Mixer & Osc. Coils	0Ω						Channels 53-68; Includes Capacitors
G	UHF Ant., RF, Mixer & Osc. Coils	0Ω						Channels 69-83; Includes Capacitors
L4	IF Trap	.9Ω		77628				
L5	Neutr. Coil	0Ω		77627				Wound on 470kΩ Resistor
L6	RF Choke	1.4Ω		77695				11 microhenries
L7	RF Choke	1.4Ω		77695				11 microhenries
L8	Fil. Choke	0Ω		77631				
L9	Fil. Choke	0Ω		77631				
L10	Cathode Choke	0Ω		77629				
L11	RF Choke	.1Ω		78234				
L12	IF Input Trans.	.1Ω	.1Ω					
L13	IF Coupling Trans. Pri.	0Ω						
L14	IF Coupling Trans. Sec.	0Ω						
L15	Conv. Plate	.2Ω	.2Ω					Includes 3300Ω Resistor
L16	2nd Video IF Grid	0Ω		78987				Includes Coupling Coil & Trap
L17	Fil. Choke	0Ω		73477	19-3001	TV-189	4604	1 microhenry
L18	2nd Video IF Plate	.1Ω		78988			6217	Includes Trap, 10kΩ Resistor, & 100MMF Cap.
L19	RF Choke	1.1Ω		78945				
L20	3rd Video IF Grid	.1Ω		78989			6218	Includes Trap
L21	4th Video IF	.1Ω	.1Ω	78990	17-4523		6219	
L22	Fil. Choke	0Ω		73477	19-3001	TV-189	4604	1 microhenry
L23	5th Video IF	.1Ω	.1Ω	78991	17-4522		6219	
L24	Fil. Choke	0Ω		73477	19-3001	TV-189	4604	1 microhenry
L25	6th Video IF	.1Ω	.1Ω	78992	17-4522		6219	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	RCA Victor PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L26	Fil. Choke	0Ω		73477	19-3001	TV-189	4604	1 microhenry
L27	7th Video IF	.1Ω		78993	17-4504		6218	Includes Trap
L28	Shunt Peak. Coil	9Ω		74214	19-3180	TV-184	6180	180 microhenries
L29	4.5MC Trap	.2ΩCT		78897	17-3402		1469	
L30	3.58MC Trap	3Ω		78892			1469	
L31	3.58MC Take-off	3Ω		78892			1470	
L32	Shunt Peak. Coil	11Ω		71526	19-3250	TV-185	6181	250 microhenries
L33	Series Peak. Coil	3.6Ω		71793	19-3036	TV-180	6176	36 microhenries
L34	Series Peak. Coil	11Ω		71526	19-3250	TV-185	6181	250 microhenries
L35	Sound Take-off	3.8Ω		78995				Includes 1N60 Crystal detector & 3.3 micro-henries RF Choke
L36	Sound IF	6.2Ω	3.4Ω	78996	17-1021 *	TV-108 *	1466 *	
L37	Ratio Det.	8.5Ω	.4ΩCT	78997	17-1033	TV-110	1468	Tertiary Winding -.1Ω
L38	Horiz. Osc.	120Ω		75213	20-1402 †	TV-162 †	6183 †	Pri. Tapped@85Ω; Horiz. Wave From Winding - 35Ω
L39	Band Pass Primary Coil	7.5Ω		78887				Pri. Tapped@2.6Ω; Tertiary Winding - 4Ω
L40	Band Pass Secondary Coil	1.7Ω		78888				
L41	Burst Amp. Trans.	4Ω	1.5ΩCT	78886				
L42	RF Choke	2.5Ω		72168	19-6022		6152	20 microhenries
L43	Reactance Coil	5.5Ω		78891				Includes Capacitors
L44	3.58MC Output Trans.	.7ΩCT		78889				
L45	Quadrature Trans.	1.3Ω		78895				Includes Capacitors & Resistors "Q" winding - .3Ω "I" winding - .3Ω
L46	Series Peak. Coil	130Ω		78902			4670	6.7 millihenries
L47	Shunt Peak. Coil	24Ω		78903			4664	1.9 millihenries
L48	Delay Filter	29ΩCT		78890				
L49	Series Peak. Coil	26Ω		79185			4652	1 millihenry
L50	Series Peak. Coil	26Ω		79185			4652	1 millihenry
L51	Shunt Peak. Coil	11Ω		98482	19-3250	TV-185	6181	250 microhenries
L52	Shunt Peak. Coil	11Ω		98482	19-3250	TV-185	6181	250 microhenries
L53	Shunt Peak. Coil	11Ω		98482	19-3250	TV-185	6181	250 microhenries
L54	Series Peak. Coil	5Ω		75253	19-3125		6153	120 microhenries
L55	Series Peak. Coil	5Ω		75253	19-3125		6153	120 microhenries
L56	Series Peak. Coil	5Ω		75253	19-3125		6153	120 microhenries

† Reverse Coil Mounting In Can.
* Drill 1 New Mounting Hole.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	RCA Victor PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L57	.630ADC	17.3Ω	.6HY	78961			C-40X		

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	RCA Victor PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	
M1	.630A	78894	1267A	9RS700SL		759S		
M2	.630A	78894	1267A	9RS700SL		759S		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			RCA Victor PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	3AG P/T	.25A 250V	73600		318.250 (3AG P/T 1/4A)		GJV1/4	
M4	3AG P/T	4.5A 250V	79357		31804.5 (3AG P/T 4.5A)			
M5	3AG	.45A 250V	78798	48894		342001		HKP
M6	#26AWG Wire		79358					
M7	#26AWG Wire		79358					

PARTS LIST AND DESCRIPTIONS (Continued)

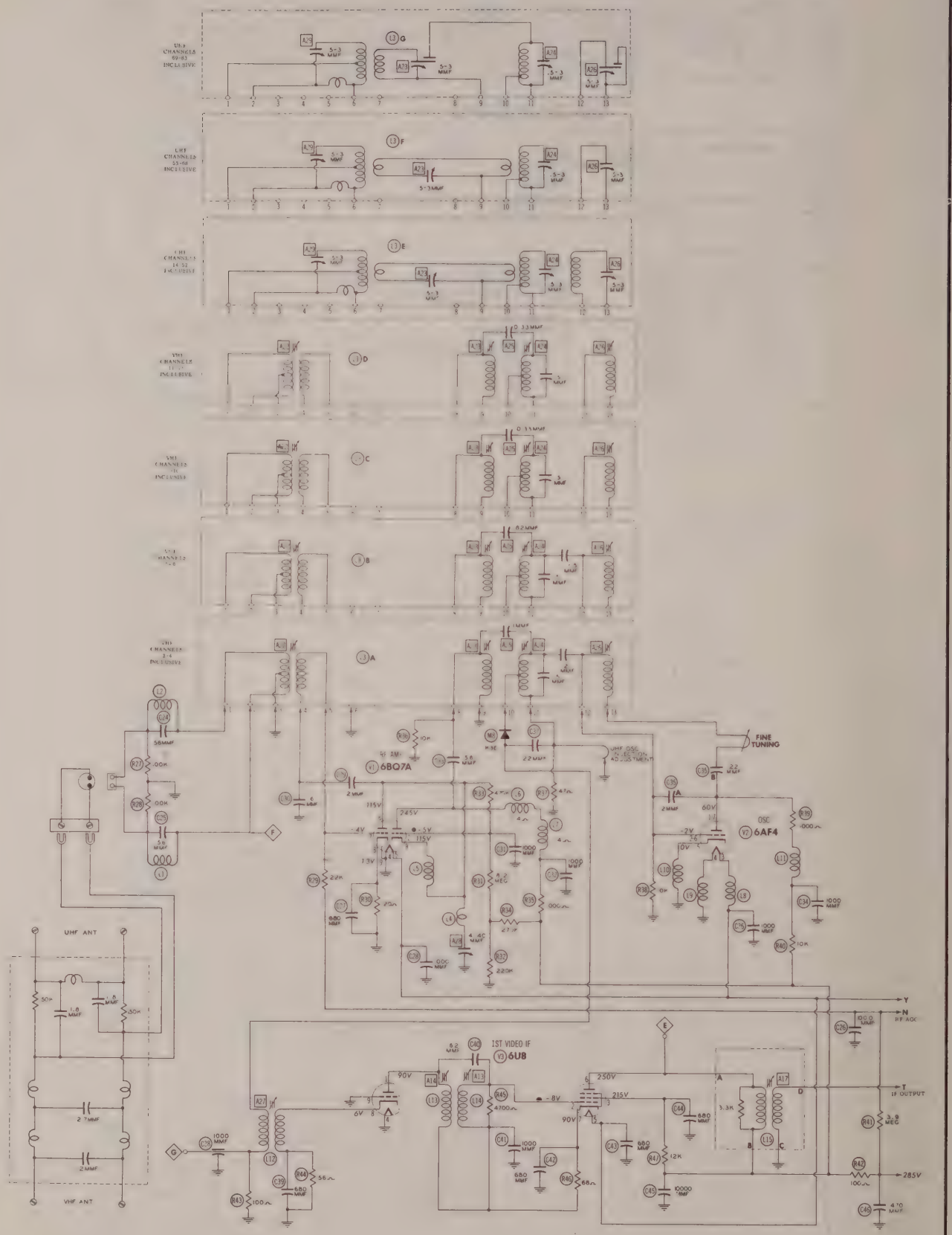
PROPERTY OF
L. F. BLANKENSHIP
3904 MEADE ST
DENVER, COLORADO

CRYSTAL DIODES

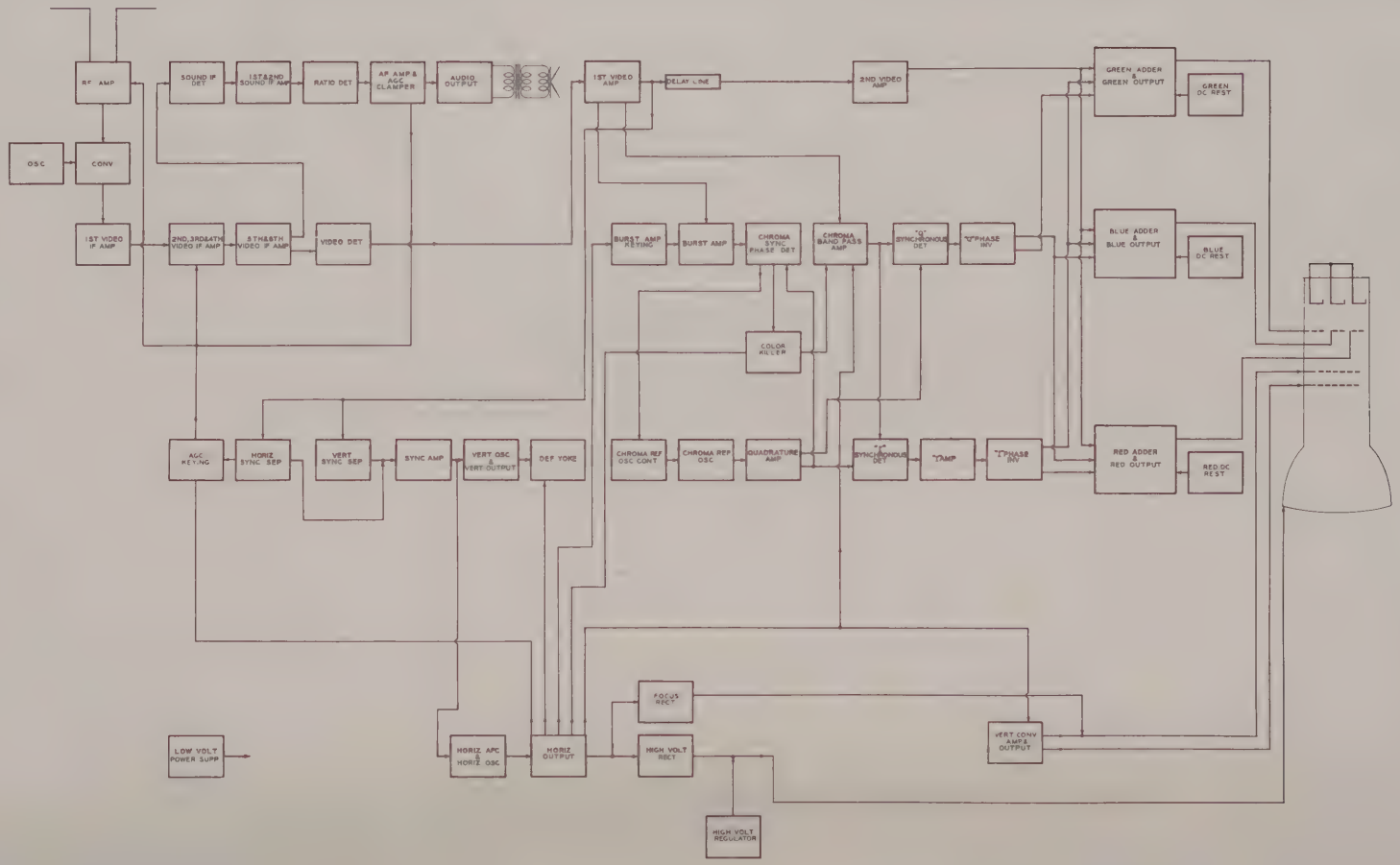
ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		RCA Victor PART No.	SYLVANIA PART No.	FEDERAL PART No.	
M8	K3E	78972	1N82 or A		RF Mixer
M9	1N60		1N60, 1N132	1N64A	Sound IF Detector
M10	1N60		1N60, 1N132	1N64A	Video Detector

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M11	Dial Light	11765	#51 Bayonet
M12	Tuner		KRK12C
M13	Pix Detector Assy.	78994	Includes all parts within dotted line
M14	Crystal	78896	3,579.545KC
M15	Delay Line	79177	
M16	Ballast Tube		
M17	Beam Positioning Magnet		3 Used
M18	Neck Shield	79125	For Purity Coil
A28	Trimmer Cap.	77616	43.5MC IF Trap (4-40MMF) Top Of Tuner
B1	Trimmer Cap.	74923	Horiz. Locking Range (4-70MMF)
	Trimmer Cap.	78962	Hue Adjust (4-25MMF)
	Knob	77709	Brightness
	Knob	78833	Channel Selector
	Knob	77547	Convergence & Focus Controls
	Knob	77699	Contrast, Hue, Color & Tone Controls
	Knob	78539	Fine Tuning
	Knob	77710	Off-On-Volume
	Safety Glass	79099	



RF TUNER SCHEMATIC



BLOCK DIAGRAM

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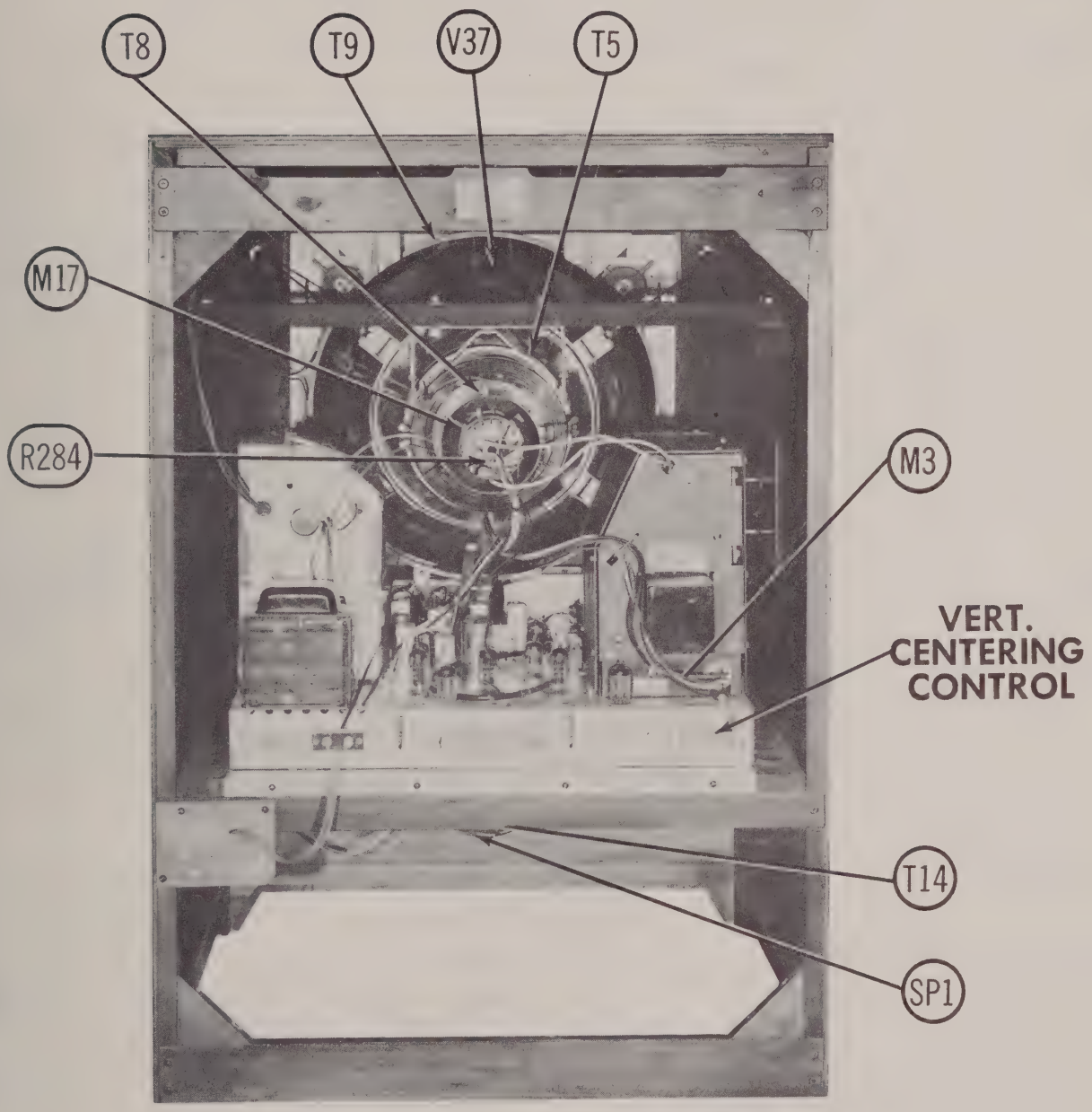
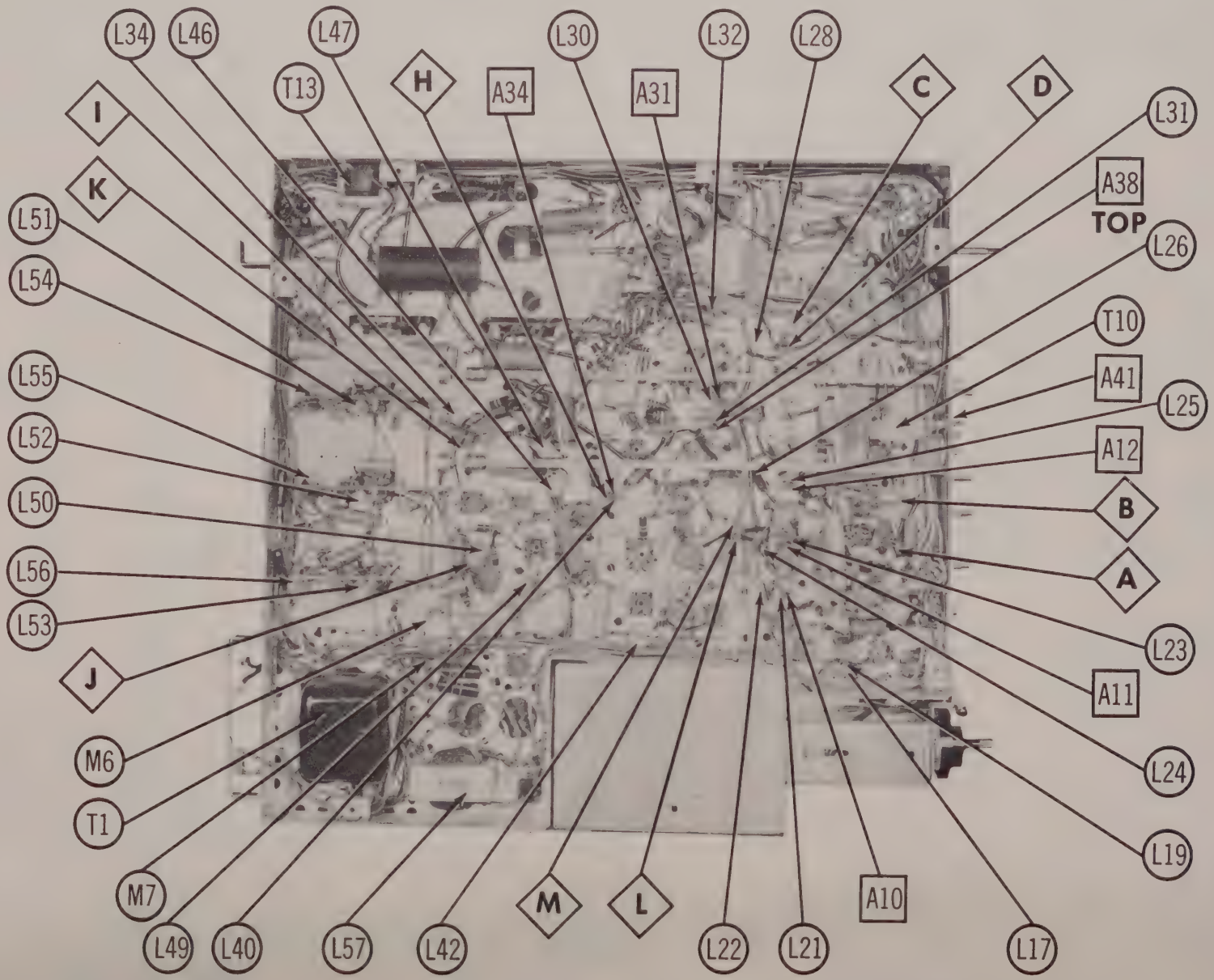


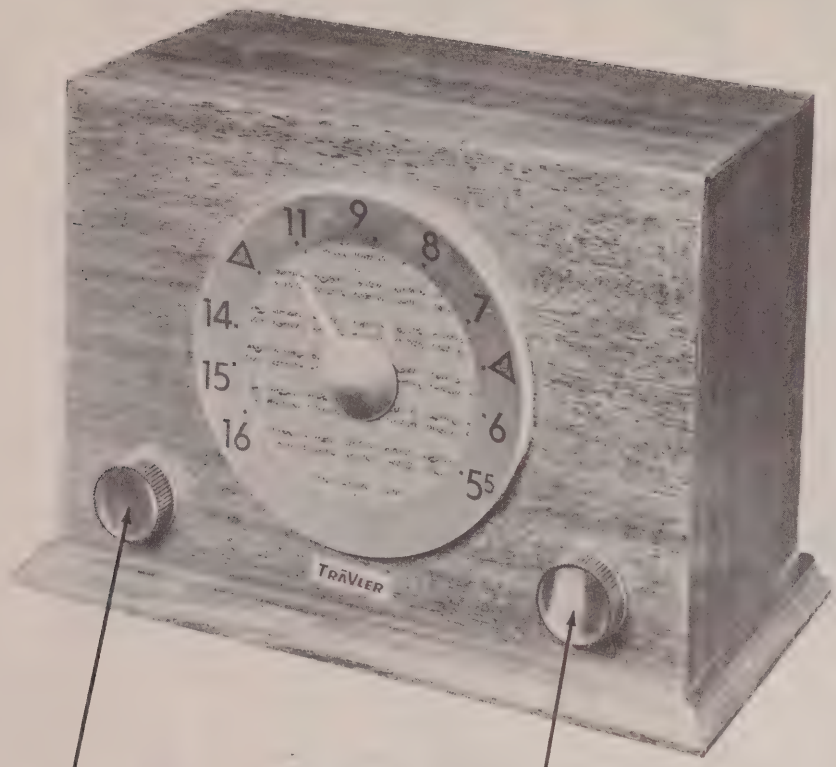
CABINET-REAR VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PROPERTY OF

TRAV ER
MODEL 5091



VOLUME CONTROL ON-OFF SWITCH

TUNING CONTROL

TRAVLER
MODEL 5091

TRADE NAME	Travler Model 5091
MANUFACTURER	Travler Radio & Tel. Corp., 571 W. Jackson Blvd., Chicago, Ill.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12SA7 Conv., 12SK7 Amp., 12SQ7 Det. -AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1630KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna stator lug on tuning gang. Low side to B-.	455KC (400∿ Mod)	Tuning gang fully open.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1630KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: TRAVLER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amplifier	12SK7	12SK7	8N	
V3	Det-AVC-AF Amp.	12SQ7	12SQ7	8Q	
V4	Output	50L6GT	50L6GT	7S	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAVLER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	EC-24	PRS150/50-		BBRD5515		TCD49	TVA-2453	Red
B	50	150		50						Red
C2	.05	400	PC-5	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C3	50	500	MC-4	1468-00005		5W5Q5		MCB225	MS-45	
C4	.05	400	PC-5	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C5A	220		♦MC-8	SI220	D6-221	TP37	GP1K-221	UC-5322	♦34C3	
B	2000			BPD-002	DD-202	K072	801-002	DC-522		
C	220			SI221	D6-221	TP39	GP1K-221	UC-5322		
D	5000			BPD-005	DD-502	K080	801-005	DC-525		
C6	.05	400	PC-7	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C7	.05	400	PC-5	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C8	.1	400	PC-8	P488-1	DF-104	CUB4P1		PT401	4TM-P1	

♦ Items C5A, C5B, C5C and C5D are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAVLER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	VC-48	Q13-137	A47-1Meg-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A

RESISTORS

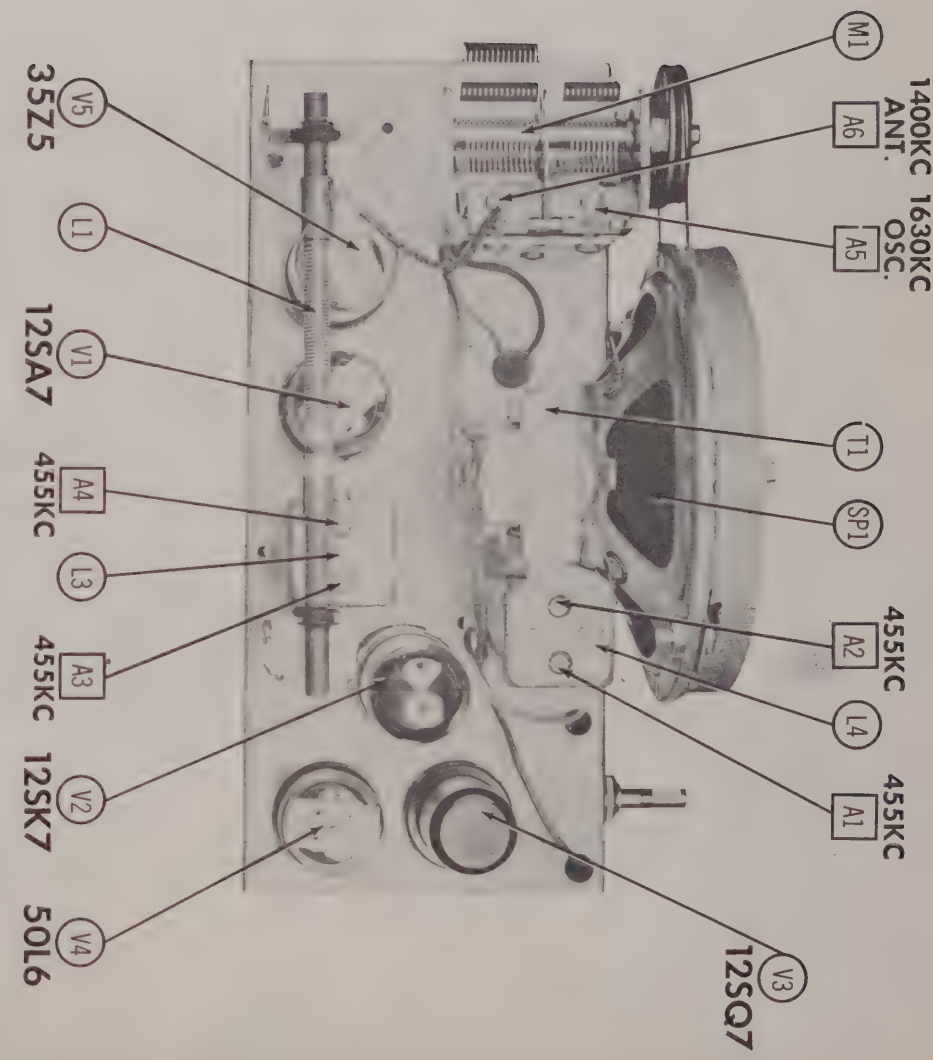
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRAVLER PART No.	IRC PART No.	NOTES
R2	22KΩ	½	IR-9	BTS-22K	
R3	470Ω	½	IR-6	BTS-470	
R4	3. 3Meg	½	IR-23	BTS-3. 3Meg	
R5	47KΩ	½	IR-10	BTS-47K	
R6	2. 2Meg	½	IR-13	BTS-2. 2Meg	
R7	470KΩ	½	IR-11	BTS-470K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRAVLER PART No.	IRC PART No.	NOTES
R8	470KΩ	½	IR-11	BTS-470K	
R9	150Ω	½	IR-14	BTS-150	
R10	1000Ω	1	IR-42	BTA-1000	-
R11	33Ω	½	IR-17	BTS-33	
R12	33Ω	½	IR-17	BTS-33	
R13	220KΩ	½	IR-20	BTS-220K	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: TRAVLER PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2. 1KΩ	3. 5Ω	Part of speaker	A-3330 ①	A-3031 ①		Z1102 ①	24S50A ①	① Bend mounting tabs down. File out slots. Mount on original mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

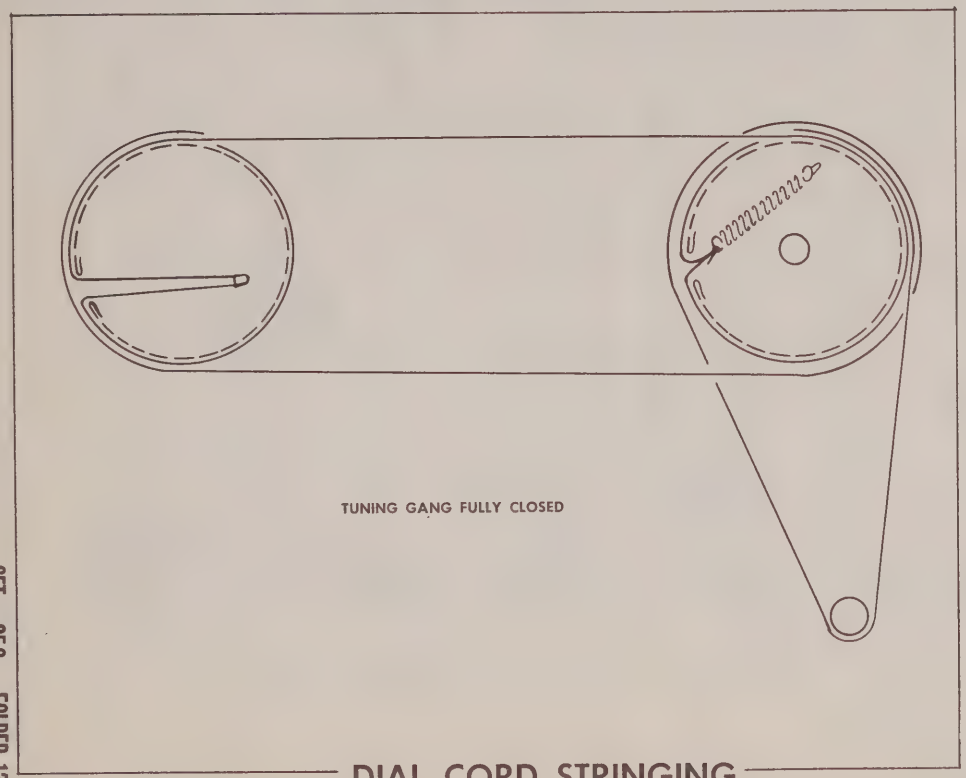
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRAVLER PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.5Ω	SPK-32	ST-105 Mod. P5-X	5A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	TRAVLER PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	1.2Ω		LL-34				
L2	Osc. Coil	.8Ω	8.2Ω	LO-13	14-1028	BC-381	70-Osc.	
L3	Input IF	17Ω	17Ω	LI-6	16-6666	BC-368	112-C1	
L4	Output IF	17Ω	17Ω	LI-7	16-6667	BC-371	112-C4	

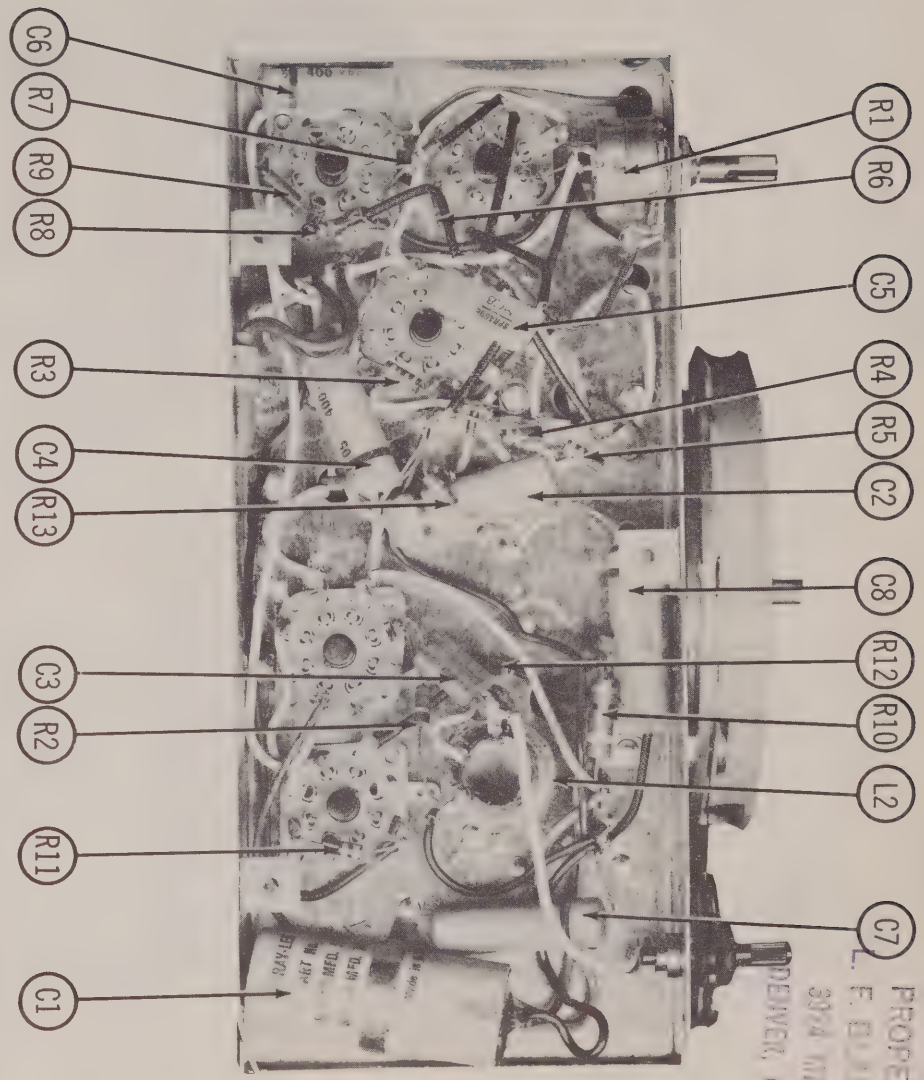
MISCELLANEOUS

ITEM No.	PART NAME	TRAVLER PART No.	NOTES
M1	Tuning cap	GC-5E	24-185MMF, 23-490MMF



DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



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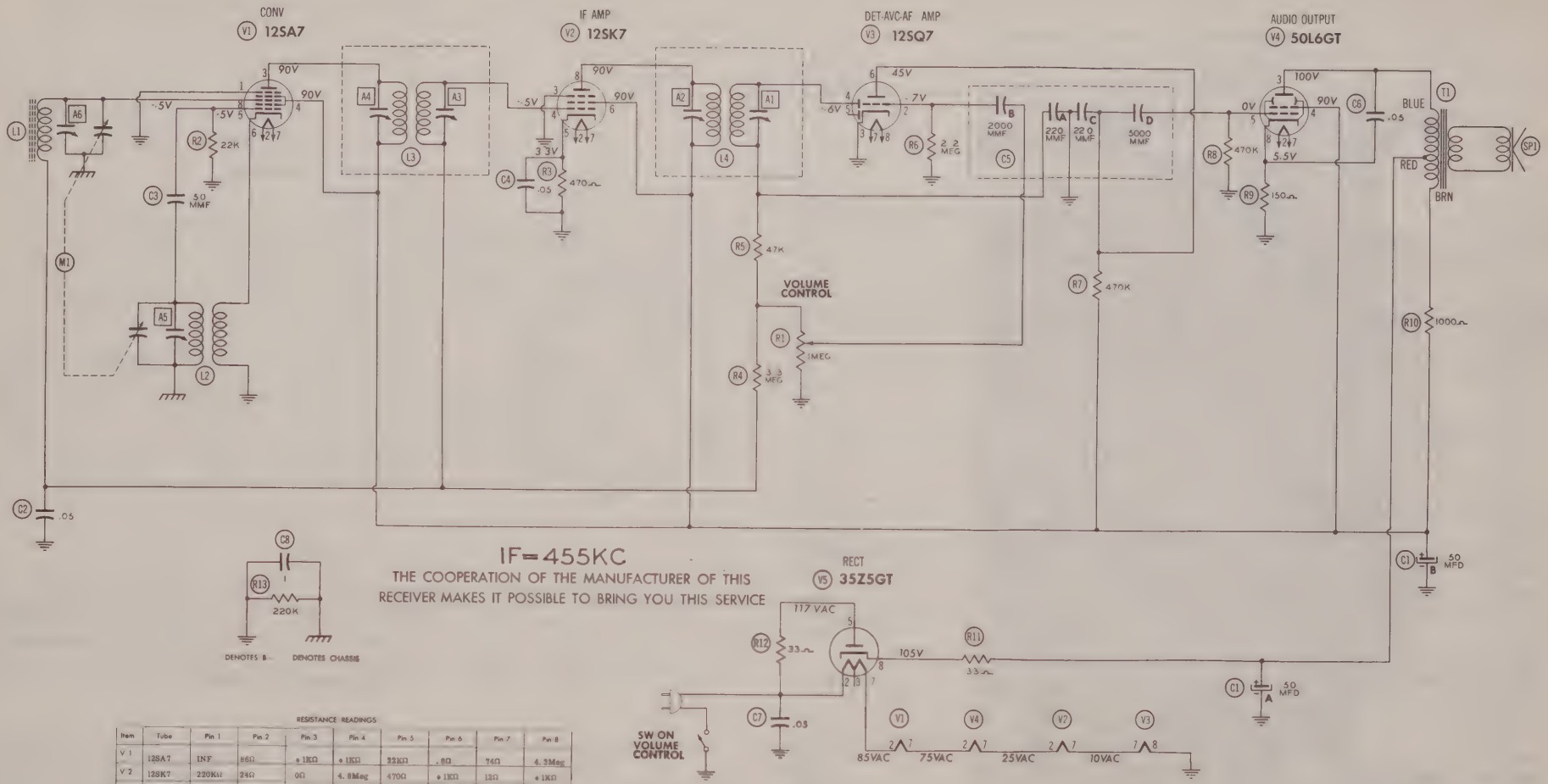
TRAVLER MODEL 5091



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	INF.	86Ω	• 1KΩ	• 1KΩ	22KΩ	.8Ω	74Ω	4. 3Meg
V 2	12SK7	220KΩ	24Ω	0Ω	4. 8Meg	470Ω	• 1KΩ	12Ω	• 1KΩ
V 3	12SQ7	220KΩ	2. 2Meg	0Ω	1 Meg	INF.	• 470KΩ	12Ω	3Ω
V 4	50L6GT	220KΩ	74Ω	• 233Ω	• 1KΩ	470KΩ	0Ω	24Ω	150Ω
V 5	35Z5GT	INF.	120Ω	100Ω	INF.	160Ω	INF.	86Ω	140KΩ

• MEASURED FROM PIN 8 OF V5.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured [illegible] from socket pin to chassis negative.
4. Line voltage maintained at [illegible] for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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V-M
MODELS 935, 936

MODEL 935

MODEL 936

V-M
MODELS 935, 936

GENERAL INFORMATION

V-M Tri-o-matic High Fidelity Record Changer Models 935 and 936 are designed to play standard 78 RPM, fine-groove 45 RPM, or micro-groove 33 1/3 RPM records of standard commercial dimensions. Records up to 12 inches in diameter can be played.

Features of Model 935 and 936 Changers include playing and automatically changing as many as ten 12", twelve 10", or any assortment of 10" and 12" records of the same type.

A full stack of fourteen 7", 33 1/3 RPM records or a full stack of fourteen 7", 45 RPM records (with the use of the "45" Adaptor Spindle) will also play on these changers.

These changers automatically shut off after the last record has been played.

Connect these changers only to an outlet supplying 117 volts, 60-cycle AC unless otherwise specified.

Manufactured by:

V-M Corporation

Benton Harbor, Michigan

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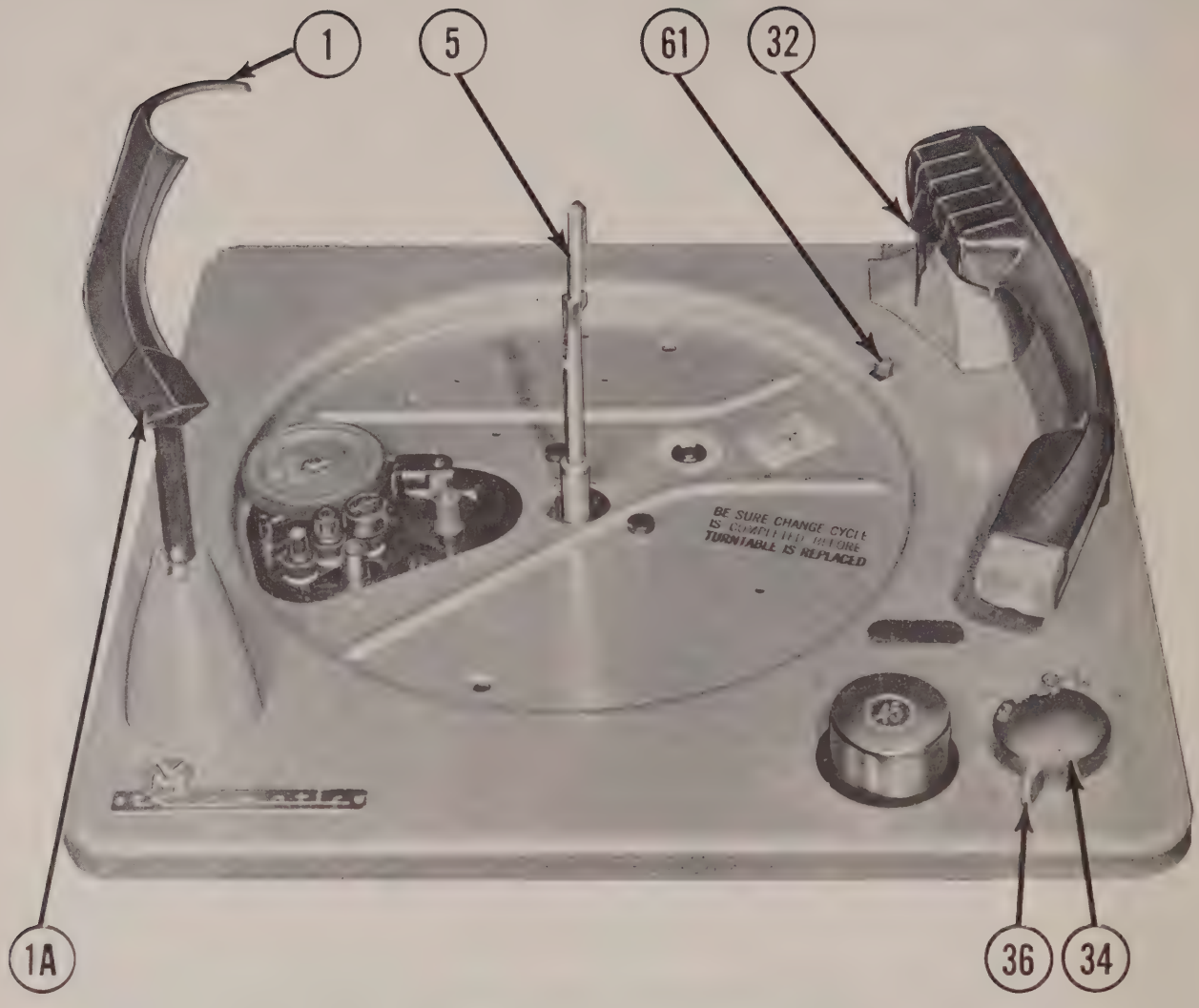

Figure 1

PREPARING FOR OPERATION

Shipping Bolts (For Model 936) -

Before placing in operation, the machine must be floated freely on the mounting springs. During shipment, the mechanism is secured by means of two shipping bolts. To float the changer, remove the turntable by lifting it straight up the spindle. Turn the two shipping bolts in a clockwise direction as far as they will go and replace the turntable. Before the turntable can be fully seated, the idler wheel must be gently pushed back out of the way to prevent damage to the motor.

OPERATION

Loading -

1. Pull straight up on record support knob until record support clears spindle. Swing record support to the left until pin in shaft drops into locating groove.

2. The changer will automatically play ten 12" either standard or long-play records, twelve 10" either standard or long-play records, any assortment of ten 12" and 10" records intermixed, or fourteen 7" long-play or fine-groove records.

NOTE: Standard, fine-groove, and long-play records cannot be intermixed. Motor speed control knob must be reset for each type of recording.

3. Place records on spindle and lower to offset shelf. Hold records level and replace record support over spindle.

To Play Standard Recordings -

1. Motor speed control knob must be in the 78" position.

2. To start, turn changer control knob to "Rej." and release. Changer will operate automatically until the last record has been played. Pickup arm returns to rest and the changer control knob to the "Off" position. Changer automatically stops.

Leveling Record Changer -

It is essential to have the record changer absolutely level. Use a torpedo or similar type level on

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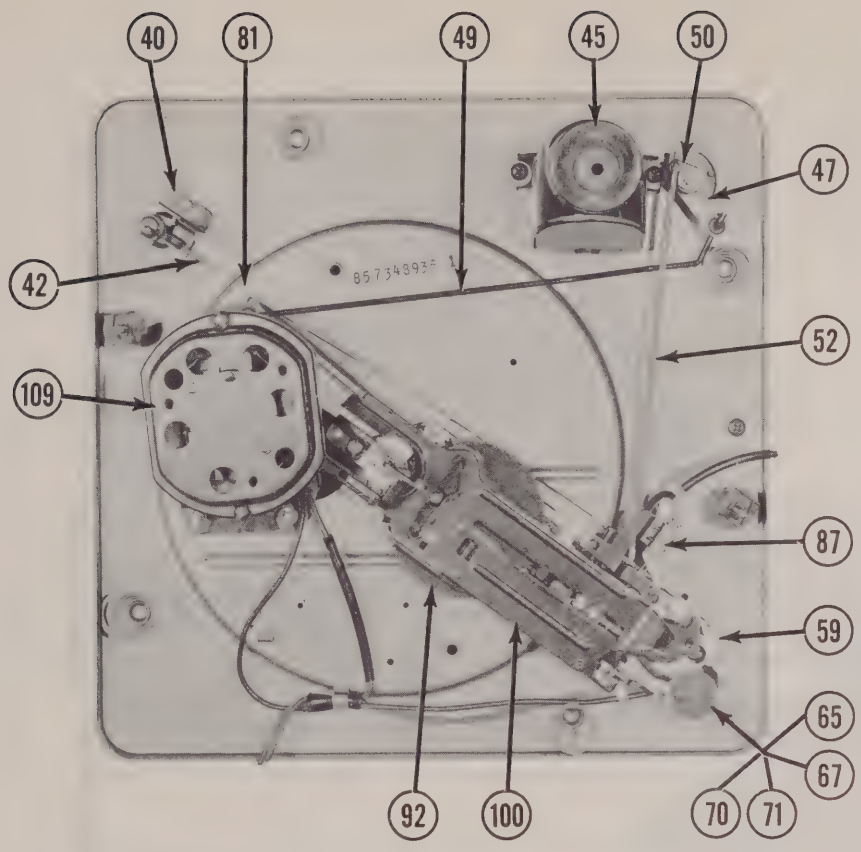


Figure 2

the record changer baseplate. Use adequate shims to level the record changer pan or radio combination cabinet to achieve perfect level.

To Play Long-Play (33 1/3 RPM) Records -

1. Motor speed control knob must be in the "33" position.

To Play Fine-Groove (45 RPM) Records -

1. Motor speed control knob must be in the "45" position.

2. Most of these records are manufactured with a 1 1/2" spindle hole. It is essential that the "45" adaptor spindle be used with all large hole records.

Rejecting -

To reject a record at any time while changer is operating, turn changer control knob to "Rej." and release.

Stopping -

To turn off changer before automatic shut-off, turn changer control knob to "Off". Lift pickup arm and place on rest.

Unloading -

Lift the record support and swing to the left until pin in shaft drops into locating groove. Lift stack of records straight up and off spindle.

Manual Operation -

To play single records or home recordings, allow the changer to go through its complete shut-off cycle. Lift the record support arm and move it to the left until clear of the turntable. Place record on spindle and lower to spindle shelf. Tilt record down toward the rear of pickup arm and lower record to turntable. Turn changer control knob to "On" position only. Raise pickup arm and gently place needle in lead-in groove of record.

Repeating Of 7", 10" Or 12" Records -

To repeat records, swing record support clear of turntable, place record on the turntable, and start changer. Record repeats until control is turned "Off". If a 12" record is repeated, wait for the changer to finish cycling and reposition the pickup arm manually to the 12" position.

Suggestions -

When loading and unloading the changer, use care to prevent bending the spindle. Records should not be left on spindle except during operation of changer. Records will warp. When machine is not in use, it is suggested that the speed control knob be left in "Neutral" position. This position is identified by the letter "N" located between the "45" and "78" speed positions. For best reproduction, keep needle and records clean. Store records flat, in folders or in albums. Do not lay record on record.

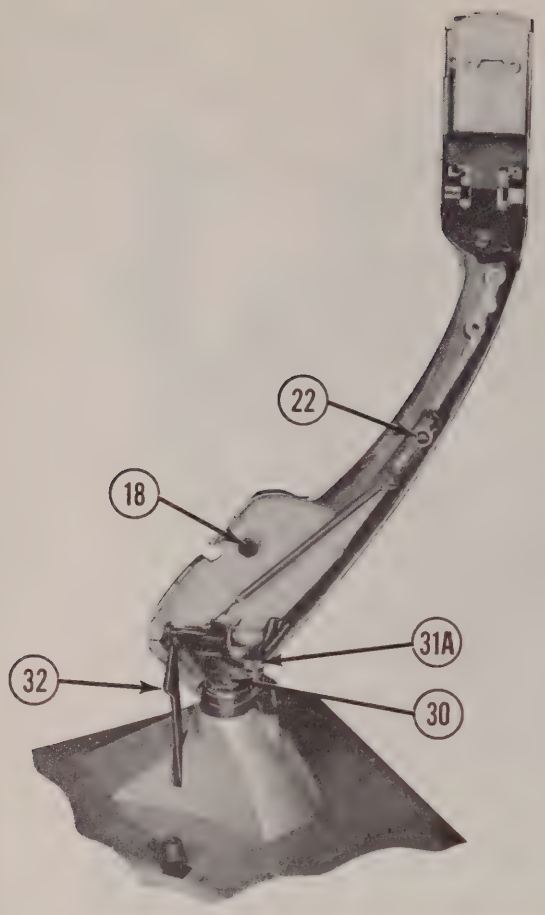


Figure 3

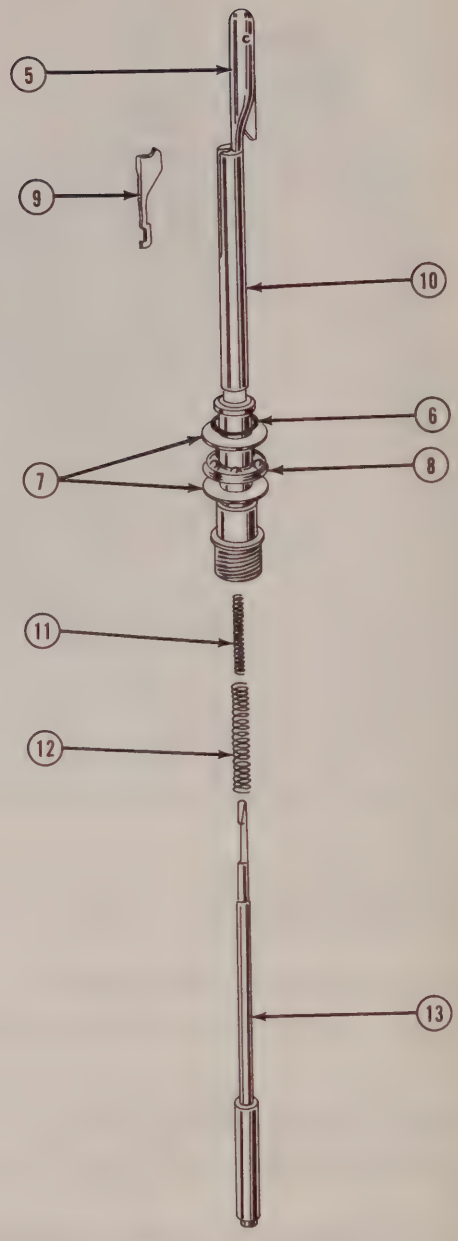
CHANGE CYCLE

It is recommended that the change cycle operation be observed by rotating the turntable by hand. The action described below can then be readily followed and the function of each part more easily understood.

This changer is provided with what is known as a velocity trip mechanism. The change cycle is started by the faster inward motion of the pickup arm when the needle enters the trip grooves at the end of the record. Only records having fast finishing grooves before the eccentric cycling groove will operate this velocity trip.

The pickup arm and hinge assembly and trip finger cam and shaft assembly (89) are secured at opposite ends so that they move in unison. As the pickup arm nears the end of a record, the trip finger cam (89) pushes the trip link (98), which, in turn, engages the trip lever (97) rotating the pawl lever (95) to move the trip pawl toward the hub on the turntable. While a record is playing, the small motions of the trip pawl are not sufficient to cycle the mechanism because on each revolution of turntable the wiping contact by the hub projection moves the trip pawl back to clear the projection.

In the first revolution of the turntable, during which the pickup arm advances rapidly, the trip pawl is moved far enough to definitely engage the projection on the turntable hub. The gear on the turntable hub



A PHOTOFACT "EXPLODED" VIEW

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Figure 4

will now engage the main gear (92) and start its rotation. This in turn, starts the lateral motion of the slide assembly (100). The slide assembly (100) moves to the rear through the action of an eccentric pin on the main gear (92) moving in the cross slot on the slide assembly (100).

As the slide assembly begins to move, the cam surface at the rear pushes the lift pin (30) upward, raising the pickup arm clear of the record. At the same time, the tab on the rear of the slide assembly (100) contacts the trip finger cam (89) swinging the pickup arm clear of the turntable.

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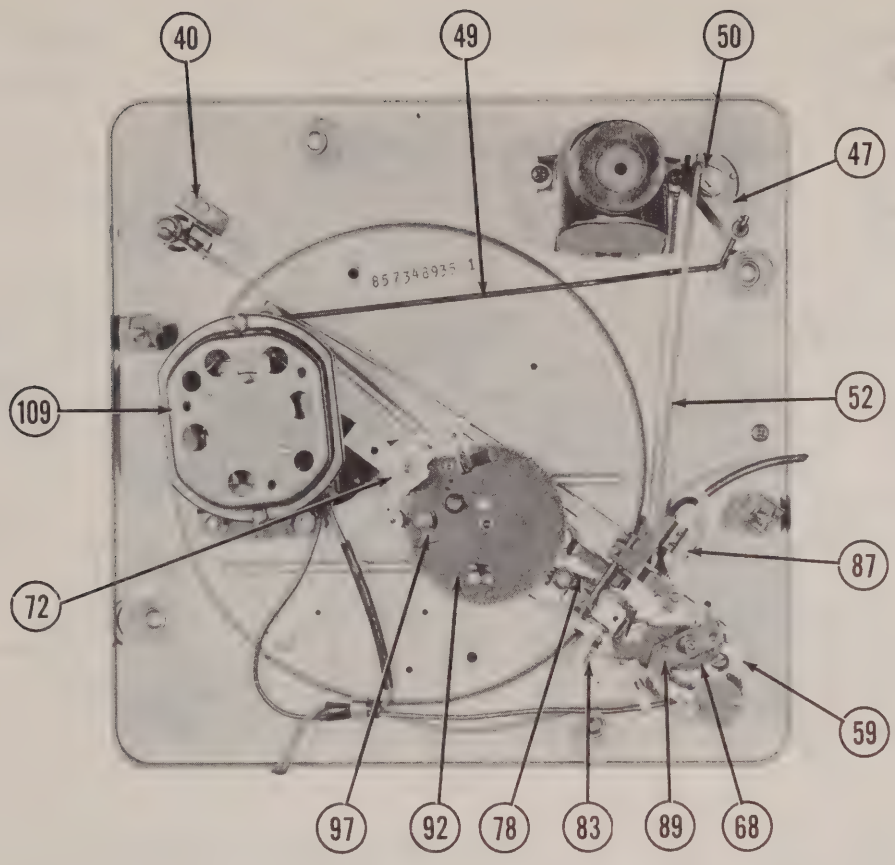


Figure 5

The front edge of the ejector link slot in the slide assembly (100) then contacts the ejector link on the ejector link assembly (108). The ejector link moves the pusher shaft and housing assembly (13) upward actuating the spindle assembly (5), causing the record pusher (9) to move straight up so as to enter the center hole of the record, and then to be pivoted forward, dropping a record to the turntable. (See Figure 5).

Simultaneously, the tab on the rear of the slide assembly (100) contacts the pickup arm return locator (68), moving it clear of the reset lever (78). The pickup arm return locator (68) is now locked in position with the trip finger cam (89) by means of matching holes in the pickup arm return locator (68) and detents in the trip finger cam (89). This is accomplished by the pressure of the compressed conical lift pin spring (90) overcoming the pressure of the locator plate separator (89A).

At the same time, the cam surface of the bracket on the main gear assembly (92) moves the reset lever (78) to mid-position (10" set-down) where it is held by the 12" record selector (32). The slide assembly (100) continues to the rear and then starts forward. If 7" records are being changed, the rubber bumper (61) of the 7" set-down lever (74) is free to move upward permitting the other end to drop into the hole in main gear (92) as this gear rotates. This action of the 7" set-down lever (74) raises the reset lever (78) to the upper position (7" set-down).

If 10" records are being changed, the 7" set-down lever (74) will not operate as the rubber bumper (61) will contact the edge of the record and the reset lever (78) will remain in the mid-position (10" set-down) as originally placed by the caming action of the bracket on the main gear (92).

If a 12" record is being changed, the edge of the record strikes the 12" record selector (32) releasing the reset lever (78) which drops to the bottom position (12" set-down).

As the slide assembly (100) continues forward, the tab on the rear of the slide will move clear of the pickup arm return locator (68) and trip finger cam (89), which are still locked together. These rotate under the action of the pickup arm return spring (66) until one of the three set-down steps in the pickup arm return locator (68) strikes the reset lever (78), which has been positioned by the record being changed (see above). This stops the inward movement of the pickup arm return locator (68), trip finger cam (89) and pickup arm. The pickup arm is then lowered to the lead-in grooves of the record at this point as the lift pin (30) rides down the rear cam surface of the slide assembly (100). As the pressure is released from the conical lift spring (90) the locator plate separator (89A) separates the pickup arm return locator (68) and trip finger cam (89), permitting the pickup arm to ride freely across the record.

As soon as the last record has been dropped, the record support assembly (1) drops below the shelf on the spindle assembly (5) and the lower end of the record support post contacts the arm of the shut-off lever on the shut-off lever bracket assembly (40). This pulls the control link (81), which in turn, rotates the crank of the lever assembly (83). This forces the lever as-

Installation — High Fidelity Cartridge — in High Fidelity Heads

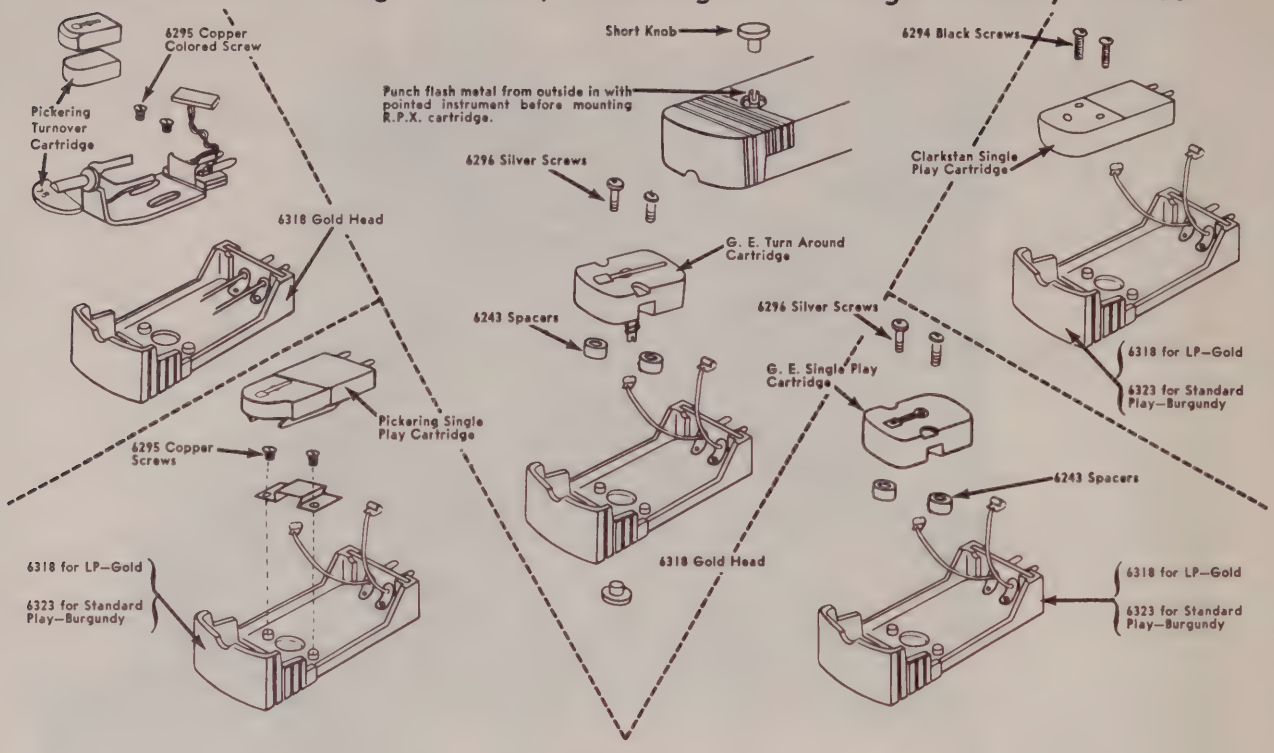


Figure 6

sembly (83) against the escape lever (103) on the slide assembly (100). At the end of the change cycle, which drops the last record, the end of the lever assembly (83) drops into the main slot on the slide assembly (100), and the other end of the lever assembly (83) is pushed against the pickup arm return locator (68).

When the last record has been played, the change cycle starts again; however, this time, as the pickup arm return locator (68) is pivoted clear of the reset lever (78) by the tab on the slide assembly (100), the lever assembly rises to the shut-off position. A tab on the lever assembly (83) raises the trip link (98) to the upper position. As the pickup arm return locator (68) starts to return the pickup arm to the record, it is stopped by the lever assembly (83) with the pickup arm positioned over the pickup arm rest post (35). The main gear continues to rotate pulling the trip link (98) forward to reset it. A tab on the upper surface of the trip link (98) contacts a lever on the control shaft assembly (63) rotating the control shaft assembly to turn off the motor and return the control knob to the "Off" position.

As the slide assembly (100) moves forward, the lift pin (30) rides down the rear cam surface lowering the pickup arm to the pickup arm rest post (35).

TRIPPING & AUTOMATIC SHUT-OFF OPERATION

In the following paragraphs a complete explanation of the mechanical operation pertaining to the "Tripping" and "Automatic Shut Off" operations are given as these phases of the change cycle are likely to be the most difficult to understand.

Tripping -

While a record is playing, the small motions of the trip pawl are not sufficient to cycle the mechanism because on each revolution of the turntable the wiping contact by the hub projection moves the trip pawl back to clear the projection. This slight movement of the pawl continues as long as the pickup moves in at a constant rate of speed. When the needle leaves the recorded section of the record, the rapid acceleration results in rapid movement of the trip pawl. The trip pawl assumes a position in which the projection on the turntable hub makes a positive contact and the main gear (92) is pushed sufficiently for engagement with the teeth on the turntable hub. This starts the change cycle.

Mechanism Stops After Playing of Last Record -

1. As the last record of the stack drops to the turntable the record support assembly (1) drops and actuates the stop arm on the shut-off bracket assembly (40). This stop arm in turn applies force to shut-off lever assembly (83) through spring (42) and control link (81). At this moment the slide assembly (100) is in the outermost position (away from spindle) and the end of shut-off lever assembly (83) is forced against escape lever (103) which prevents it from lowering any further.

2. As the slide assembly (100) returns to the out of cycle position the end of shut-off lever assembly (83) slides off the escape lever (103) permitting the end to extend down through the slot in the slide assembly (100). At this time the pickup arm return plate (68) has rotated too far to be blocked by the other end of the shut-off lever (83) and the pickup arm is permitted to land on the record.

3. After the last record has been played the mechanism again goes into change cycle, and the slide assembly (100) moves to its outermost position. At this moment the force which has been applied to the

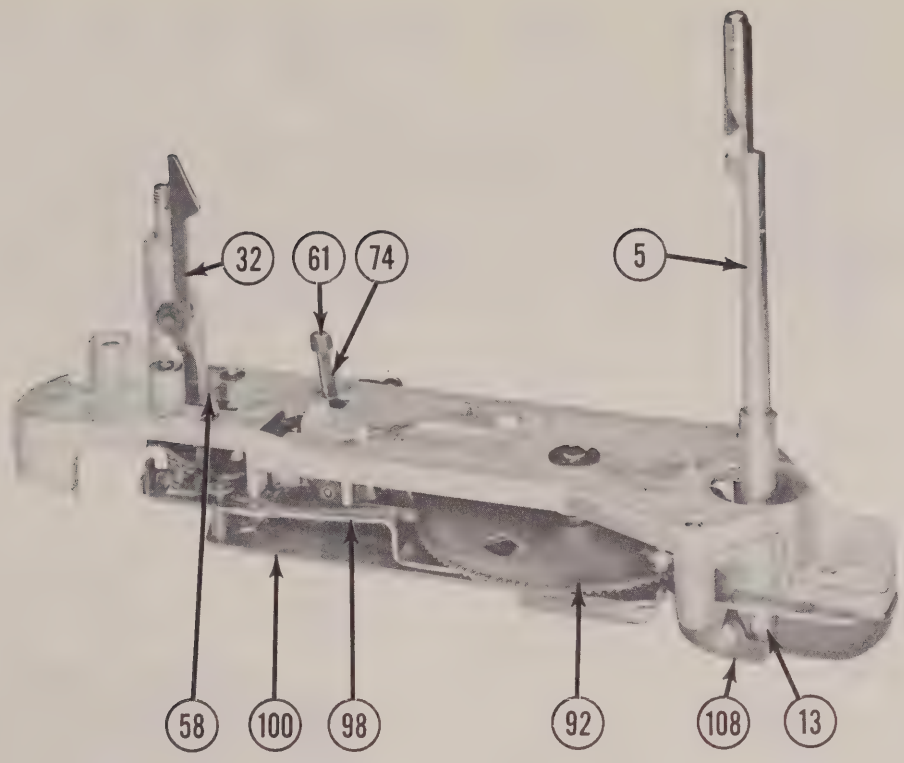


Figure 7

shut-off lever assembly (83) from the record support causes the end to lower, thus extending further through the slide assembly (100). The other end of the shut-off lever (83) raises and blocks the pickup arm return locator (68) which at this moment is held back by the slide assembly (100).

4. As the slide assembly (100) moves back toward the spindle, it carries the raised trip link (98) along until finally the formed end of the trip link pushes control shaft (63) which in turn actuates power switch (65). This removes power from the drive motor and the mechanism stops.

5. The lift pin (30) rides down the incline on the rear of slide assembly (100) and lowers the pickup arm to the arm rest.

ADJUSTMENTS

Anti-Skate (Refer to Figure 4)-

935 and 936 record changers are provided with an anti-skate feature which prevents the needle from sliding into the grooves until a lead-in groove picks it up and advances it, thus preventing damage to the needle and record.

These changes have been adjusted to anti-skate effectively at 7 1/2 to 9 1/2 grams needle pressure. If other needle pressures are desired, the anti-skate friction may be adjusted as follows:

1. Raise pickup arm and with the aid of pliers hold head of lift pin (30), (See Fig. 4).

2. Insert a small screw driver in hole in lift pin and engage in slot.

3. Rotate screw driver clockwise for more anti-skate friction, counterclockwise for less anti-skate friction.

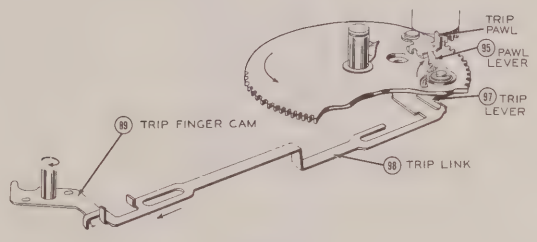


Figure 8

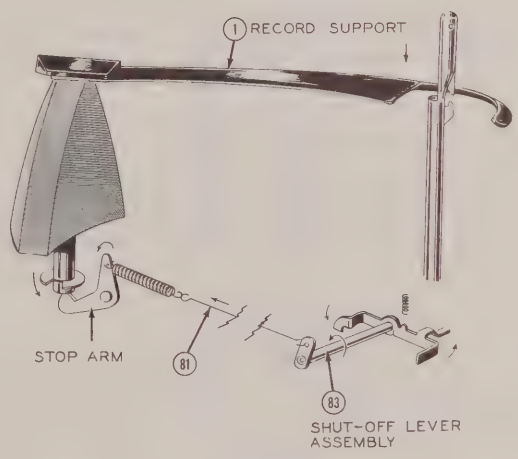


Figure 9

NOTE: More anti-skate friction is required for higher needle pressures, less for lower needle pressure.

Check for proper anti-skate friction by placing a long-play record on turntable, cycle changer automatically and observe the needle. If needle sets on lead of record and hesitates momentarily until a lead-in groove picks it up and advances it, the anti-skate

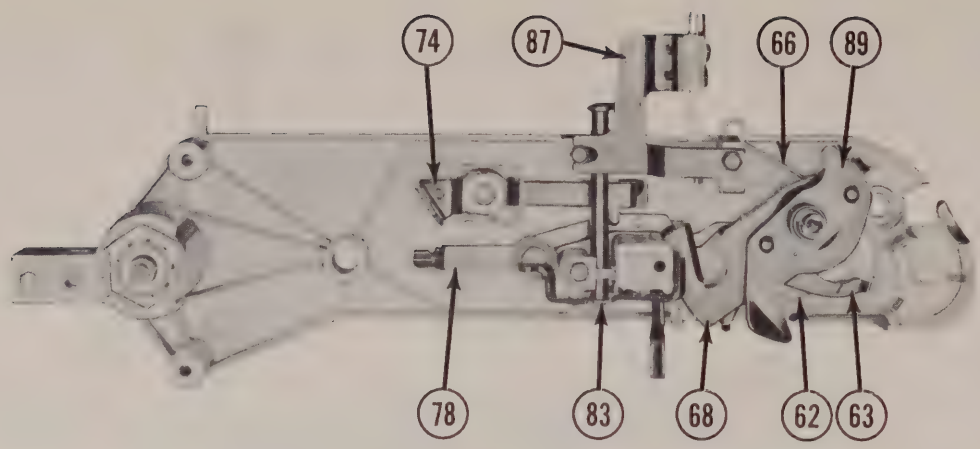


Figure 10

is properly adjusted. If needle sets on record and immediately slides into the grooves, anti-skate friction is too low. If needle sets on record and hesitates for one turntable revolution and then slides into grooves, anti-skate friction is too high.

Needle Set-Down (Refer to Figure 4)-

The set-down position of the needle is adjusted by means of the set-down adjustment screw (31A) mounted on the hinge arm assembly (31). Turn this screw adjusting pickup arm for correct set-down on a 10" record. When the correct set-down is obtained for the 10" position, the 12" and the 7" needle set-down will also be correct.

Pickup Arm Height (Refer to Figure 4)-

The pickup arm height is adjusted by the lift screw (18) located at the rear of the strengthener. To raise the height of the pickup arm, turn this screw counterclockwise. To lower the pickup arm, turn clockwise. The pickup arm height should be adjusted so that with a 1 1/8" stack of records on the turntable the pickup arm lifts 1/4" straight up as the change cycle starts.

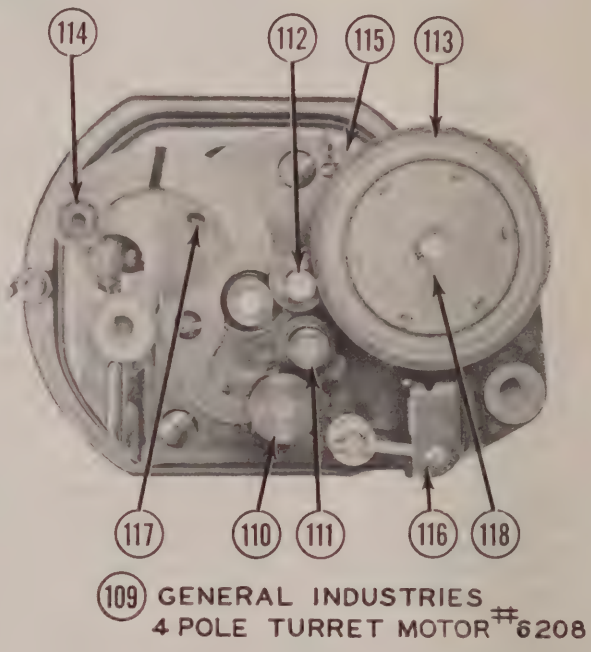
Needle Pressure (Refer to Figure 4)-

The needle pressure should be between 10 and 12 grams. Adjustment may be made by loosening screw (22). Move the slide back or forward until the correct needle pressure is obtained.

LUBRICATION

Additional lubrication should not be required for the life of the changer, but in cases of unusual use or high-operating temperature, the changer should be lubricated as follows: (Refer to the exploded view.)

Apply Andok "B" or Texaco Sta-Put to:



1. Edges of all slots in slide assembly (100).

2. Outer edges of tines on forked end of slide assembly (100).

3. Lift pin cam surface on slide assembly (100).

4. Lower surface of pickup arm return locator (68).

5. Inner surface of tab on rear of slide assembly (100).

Apply a small quantity of light mineral oil to:

1. Trip finger cam shaft (89).

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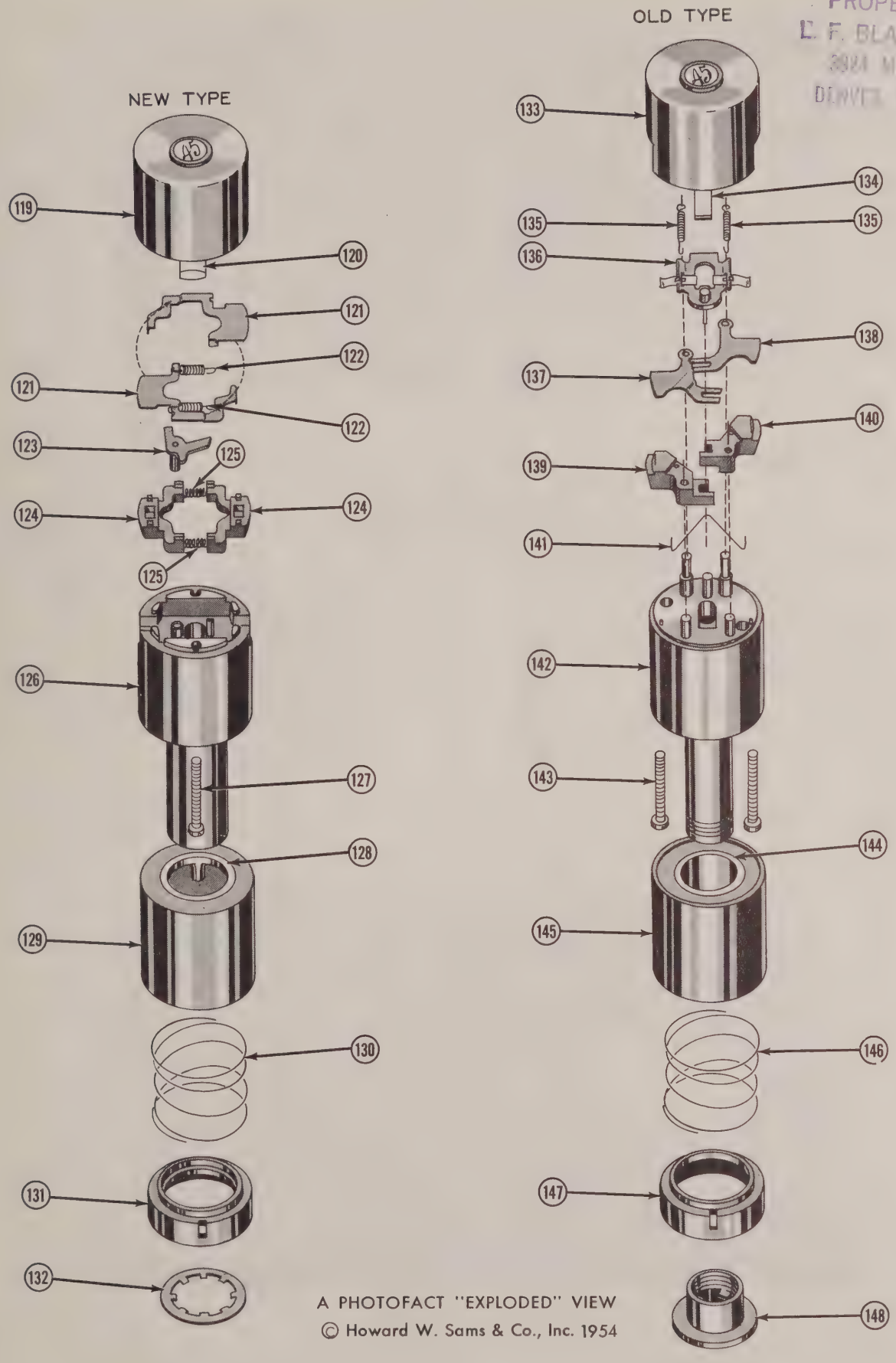

Figure 11. Exploded View Of New And Old Type 45 Spindle.

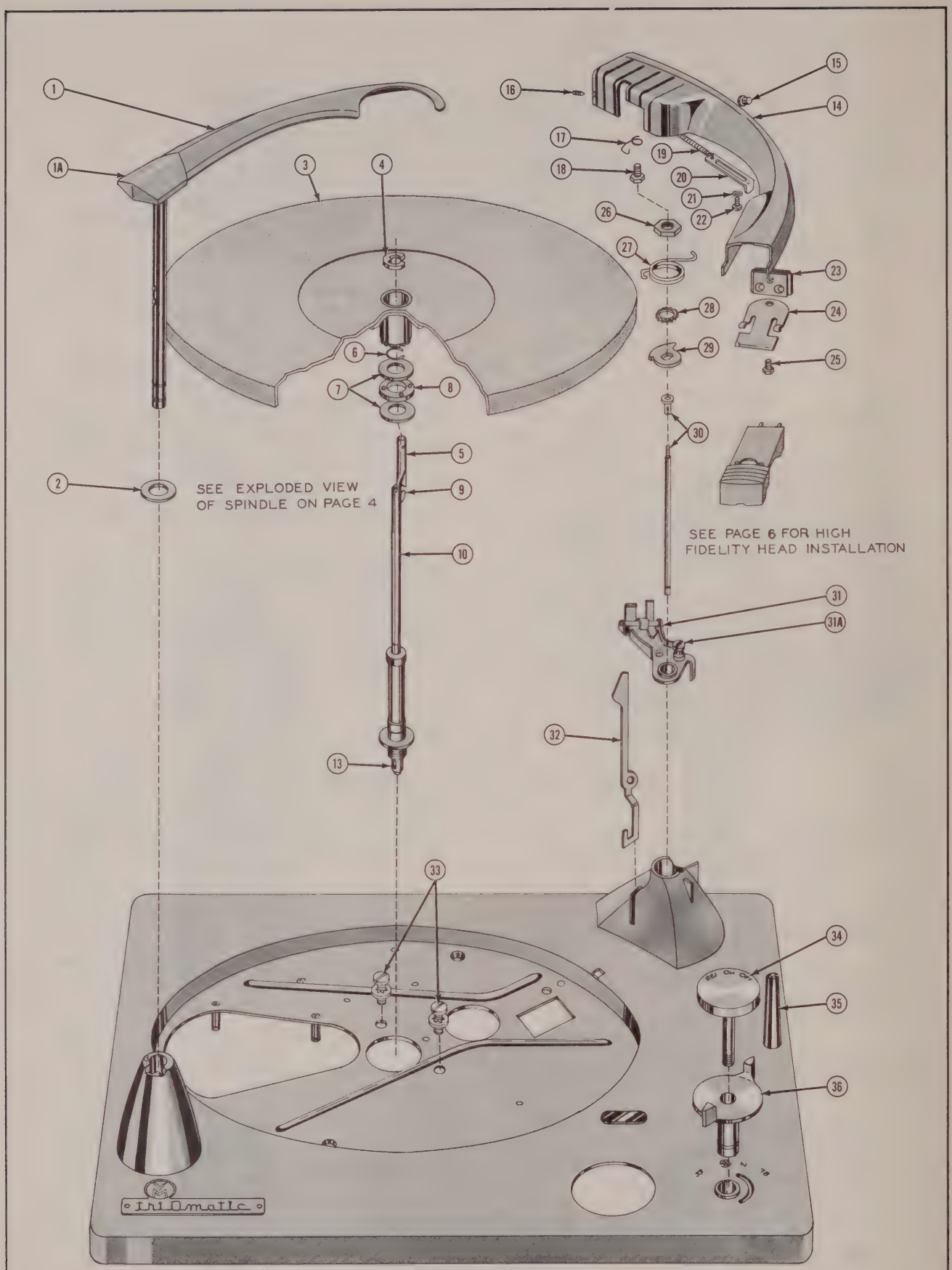

Figure 12A. Exploded View Of Parts Above Baseplate.

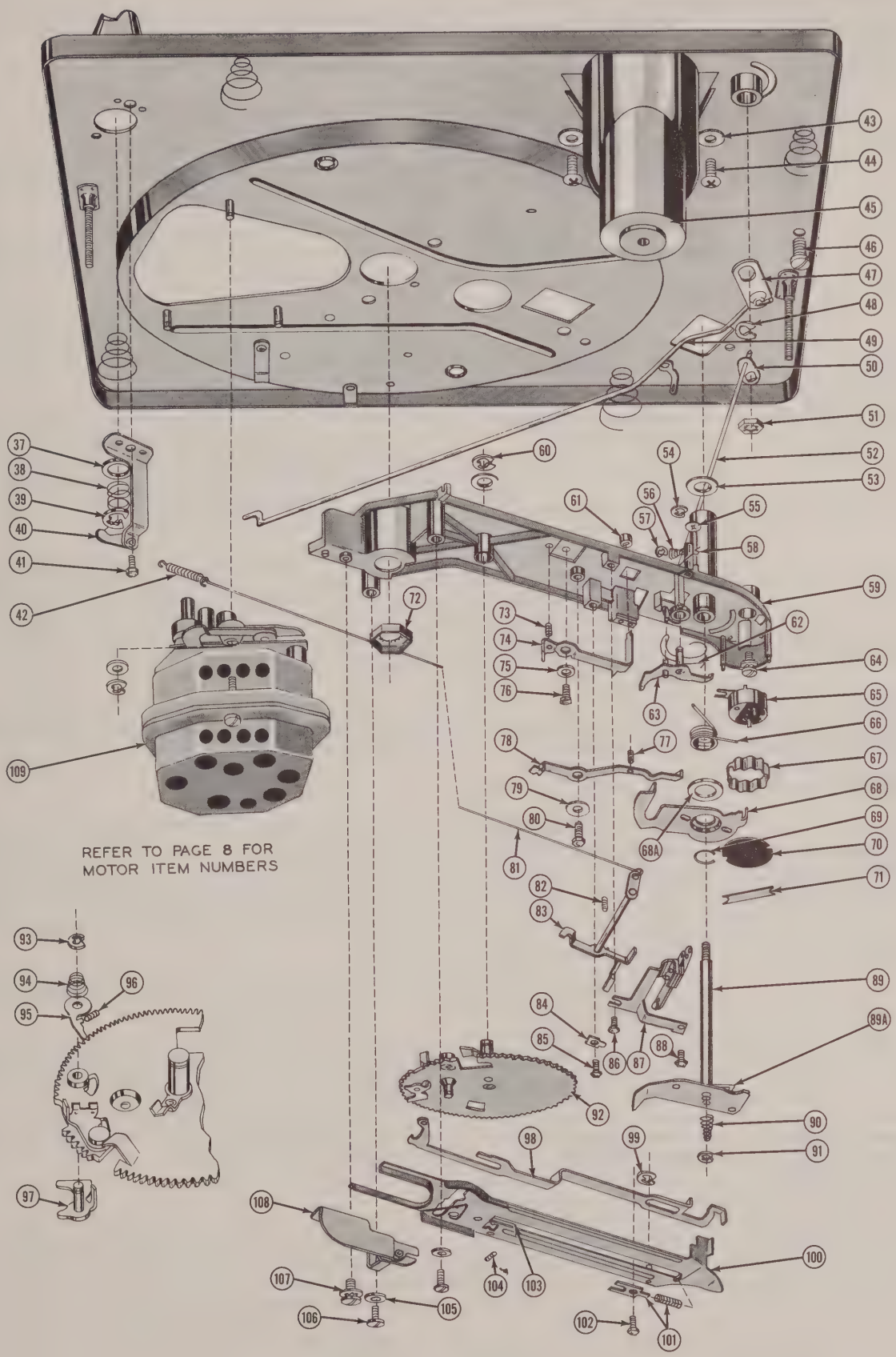

Figure 12B. Exploded View Of Parts Below Baseplate.

TROUBLE CHART

SYMPTOM	CAUSE	REMEDY
Turntable does not revolve when control is turned to "On".	1. No current at motor.	(a) Check that current is reaching AC leads of changer. (b) Check that switch is closing. (c) Check wiring and soldered terminals in the changer.
	2. Motor defective.	(a) Remove turntable to allow motor to operate without load. If current is reaching motor and drive spindle does not rotate, the motor is defective. Repair or replace.
	3. Motor idler wheel not engaging turntable rim.	If drive spindle is turning but turntable is not: (a) Check motor idler assembly to determine if it is free to contact the drive spindle and turntable rim. (b) Wipe off inside rim of the turntable (3) to remove flock, or if oily, clean the turntable rim and rubber tire of the idler wheel with naphtha, or alcohol.
Changer does not cycle when the control knob is turned to "Rej.".	1. The manual reject not actuating the trip.	(a) Turn the control knob (34) to the reject position, hold and see that the control shaft assembly (63) has moved the trip link (98) to the rear. This should actuate the trip pawl on the main gear (92), which will bring the spur on the trip pawl in contact with the hub gear on the turntable hub. (b) Check for binding of the pawl lever (95), the trip lever assembly (97) and the trip pawl. If binding occurs, clean out all foreign matter and check for freedom.
Control knob cannot be turned to "On" position.	1. Machine shut off during cycle.	Turn the turntable clockwise, by hand, until the control knob (34) is free.
Pickup arm strikes records on spindle when it raises, or pickup arm rest when it moves out.	1. Pickup arm height not adjusted properly.	See instructions for adjusting pickup arm height under "Adjustments".
Turntable speed too slow (refer to exploded view).	1. Binding in turntable bearing.	Check the turntable bearing for freedom. Hold the motor idler wheel out of engagement with the turntable and spin the turntable, by hand, to see if it turns readily and coasts for a long time. If binding occurs, remove turntable, clean off foreign matter, and lubricate with light mineral oil.
	2. Line voltage too low	The line voltage should not be less than 105 volts or the turntable may be too slow.
	3. Operating temperature too low.	If the machine has been stored in a cold place or operated in surroundings at a temperature of less than 60^0 F., the turntable speed may be too slow.
Turntable stalls or slows down during cycle (refer to exploded view).	1. Motor idler not engaging turntable.	See "Turntable Does Not Revolve When Control Knob Is Turned To "On" Position".
	2. Binding in drive mechanism.	Hold idler away from turntable, or remove idler wheel. Cycle machine by turning turntable slowly by hand. The main gear should turn freely for the complete revolution without binding at any point. (a) If binding occurs, check for foreign matter in the gear teeth, a bent gear bearing, or bent spindle bushing.
	3. Binding between pickup arm lift pin (30) and lift pin cam surface on slide assembly.	Lift pin should ride freely on cam surface without binding.

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SYMPTOM	CAUSE	REMEDY
	4. Spindle pusher spring compressing too far.	Cycle the changer and watch the relationship between the bottom of the pusher housing and the lower button of the pusher housing. Just before the slide (100) has completed its backward motion, the pusher housing should stop its upward motion and the lower button should continue up .005 to .047" more, slightly compressing the pusher spring. If the spring compresses to much, the changer may stall on the shut-off cycle.
	5. Motor weak.	When everything checks all right, but the changer still stalls in cycle, the motor may be weak.
	6. Grease on idler wheel.	1. Wipe off idler wheel rubber tire; inner rim of turntable and rubber belts with naphtha or alcohol.
	7. Turrets unseated from lock ring on turret shaft.	Remove turret and center lock ring. (If lock ring is distorted, replace with new lock ring.) Replace turret and press down to assure turret of being locked to the turret shaft. (Turret will snap into position when properly locked.)
	8. Idler slide bent.	Straighten and clean or replace.
	9. Idler wheel tension spring weak.	Replace spring or bend motor tension spring anchor bracket to give desired tension.
Changer continues to cycle.	Reject Mechanism binding.	(a) Make certain the trip link (98) is not frozen in the reject position. (b) Make certain the changer control lever (63) is not binding and that it actuates the trip link (98) when the changer control knob (34) is turned to reject. (c) Check for binding of trip pawl, trip lever (97) and pawl lever (95); these must be free to turn easily. (d) Check the changer control linkage, (52) and (63).
Noise during playing of record.	1. Motor rumble.	If a low-pitched rumbling sound comes from the loud speaker while a record is being played, check motor grommets to be sure the motor is freely suspended on them. The motor lead wires should have slack to allow the motor to float. Motor rumble may also come from an unbalanced motor rotor; in this case, replace the motor.
	2. Defective turntable bearings (8).	Defective turntable bearings can cause rumble. Check for foreign matter in the bearing, defective balls, binding between balls and ball retainer; rough surface on washers. Clean ball bearing, sleeve bearing, and washers; lubricate with light mineral oil.
	3. Defective motor idler wheel or speed pulleys.	A rapid thumping sound while the motor is running may indicate a flat spot on the motor idler wheel or speed pulleys. If this condition does not clear up after ten minutes of running time, remove the turntable and check the rubber tire on the idler or pulleys. If the surface of the rubber tire is not smooth and even, replace the part. Should the bearing of the idler wheel show signs of excessive wear or be extremely wobbly. the idler wheel should be replaced.
	4. Defective record.	Worn or defective records cause needle scratch and distortion of the recorded sound. If the record is warped, it may slip on the other records causing "Wow" (a waver in the recorded sound). An enlarged hole in the record can also cause "Wow".

TROUBLE CHART - Con't.

SYMPTOM	CAUSE	REMEDY
	5. Turntable scrapes.	If a scraping sound occurs as the turntable revolves, check: (a) Turntable warped, causing outer rim to rise and fall. (b) Motor idler or mounting plate bent.
	6. Squeaks.	Squeaking sound as changer operates indicated lack of oil. Lubricate points indicated under "Lubrication".
	7. Pulleys on motor not properly seated.	Check that pulleys are properly seated.
	8. 7" lever (74) loose.	Check 7" lever washer (75) and screw (76) to see if they are tight.
Distortion of Recorded Sound.	1. Defective record.	See "Noise During Playing Of Record".
	2. Defective amplifier.	Check phonograph amplifier and speaker.
	3. Bad cartridge.	Replace.
No Sound During Playing.	1. Defective cartridge.	Replace. (See "Defective Cartridges".)
	2. Defective wiring.	Check pickup leads for a shorted or open lead.
	3. Defective amplifier.	Check phonograph amplifier and speaker.
	4. Loose cartridge terminal clips.	Remove, squeeze together slightly, and replace.
Excessive Record Wear.	1. Binding of pickup arm.	See "Needle Does Not Track Across Record Properly".
Changer does not shut off after last record has been played (refer to exploded view).	1. Record support binding.	The record support must drop below the off-set shoulder of the spindle or the changer will not shut off. (See "Two Records Drop At Once".)
	2. Lever assembly binding (83).	Clean out dirt and make sure this operates smoothly.
	3. Control link broken (81).	Replace.
	4. Spring (42) loose or borken.	Replace.
	5. Shut-off lever binding.	Check lever and if bent, straighten.
Rough pickup arm motion.	1. Horizontal defects.	(a) Check pickup arm return locator (68) for tightness. (b) Check that pickup arm return spring (66) is not weak and is hooked up properly. (c) Check that fiber washer (68A) is installed over pickup arm return locator (68).
	2. Vertical defects.	(a) Lift pin (30) binding; clean out dirt and lubricate. (b) Slide (100) binds; check bearing points -- clean and lubricate. (c) Burrs in main slot in slide (100) -- remove with fine file. (d) Ejector lever on ejector bracket assembly (108) binding in slide and cam slot; straighten, remove burrs, and lubricate.

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SYMPTOM	CAUSE	REMEDY
		(e) Pickup arm shaft and sleeve binding; clean and lubricate.
Noise during change cycle.	1. Tines on the forked end of the slide assembly (100) bent.	Replace.
	2. Lack of lubrication, grinding noise.	Lubricate ejector lever (108) where it contacts lower end of spindle (5).
Control knob does not detent on "33", "45", or "78" positions.	1. Bent parts.	(a) Insure that forked shaped stamping under idler is catching in detent notch. Straighten or replace motor. (b) Insure that speed control arm (47) and speed control rod (49) are not bent.
Cartridge drags on record.	1. Needle bent.	Replace needle.
	2. Cartridge mounting screws loose.	Tighten.
Shuts off when last record drops.	1. Shut-off bracket (40) bent.	Straighten or replace.
	2. Record support bent.	Bend down slightly so record support (1) is parallel with the base plate.
	3. Shut-off link(81) bent.	Straighten or replace.
	4. Loose bearing (84) on shut-off lever assembly (83).	Tighten.
Will not play manually.	1. Trip link (98) bent.	Straighten or replace.
	2. Trip finger cam (89) bent.	Straighten or replace.
Impossible to adjust set-down.	1. Pickup arm shaft and sleeve assembly (89) defective.	Shift the safety plate (29) toward the eccentric set-down adjusting screw (31A), and tighten pickup arm shaft and sleeve nut (26). Hold pickup arm against rear stop and push on trip finger cam (89). The safety plate (29) should move away from the set-down adjusting screw (31A) and snap back when the trip finger cam (89) is released; if it does not, replace the pickup arm shaft and sleeve assembly (89).
Record does not drop when changer cycles.	1. Spindle pusher shaft and housing assembly (13) broken.	If the pusher shaft (inside the spindle) is broken, the lower end (housing) will drop out of the spindle (10) (see Figure 5). Loosen spindle nut (72) and remove spindle (5). Replace with new spindle unit.
	2. Record pusher (9) in spindle not moving far enough forward to eject a record.	The record pusher should move up inside the spindle body (10), then move forward until it has reached a point flush with, or a maximum of, .010" beyond the spindle body (10). To insure that the record pusher (9) is all the way forward, the lower button on the shaft and housing assembly (13) should be raised high enough by the ejector lever to slightly compress the pusher spring inside the pusher shaft and housing assembly (13). See ("Turntable Stalls During Cycle"). If the spring is compressed and the record pusher (9) does not move far enough forward to eject a record, the spindle (5) should be replaced. If a record is not pushed completely off the ledge, it may hang on the spindle momentarily, then drop on the pickup arm when it moves in over the turntable.

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SYMPTOM	CAUSE	REMEDY
	3. Record pusher (9) raises outside the spindle body (10).	When changer cycles, the record pusher (9) should rise up just inside the spindle body, then move forward inside the center hole in the record. If the record pusher (9) rises outside the spindle body (10), it will raise the record instead of pushing it off the spindle ledge. Remove the spindle (5) and replace with a complete new spindle assembly.
Two records drop at once (refer to exploded view and Figure 5).	1. Hole in record too large.	Check the diameter of the hole in the record. An oversize hole will cause two records to drop at once.
	2. Spindle guide not fully down.	If the spindle guide is not all the way down, more than one record may be dropped at a time. (a) Check the guide to be sure it is free and does not bind at any point. Clean out foreign matter or straighten if necessary. Do not oil. (b) When records are placed on the spindle, be sure the guide is all the way down. The guide will normally raise as a record is being dropped, but it would return to place immediately, by gravity.
	3. Record pusher (9) defective.	The record pusher (9) may be deformed, etc. This may cause two records to drop at once. Replace with new pusher or replace spindle assembly.
	4. Slight play in spindle (5).	Tighten spindle nut (72). If stripped, replace.
Record hits pickup arm (refer to exploded view).	1. Record pusher (9) not moving far enough forward to eject record.	See "Record Does Not Drop When Changer Cycles" #2.
	2. Record pusher (9) extending beyond outside diameter of spindle.	Cycle changer, by hand, until pusher shaft and housing assembly (13) is at the top of its travel. Using new record as a gauge, pass it over the spindle to see if it binds at any point. File off high points on record pusher (9), with a fine file, until record will pass freely over spindle.
	3. Pickup arm not adjusted properly.	See "Adjustments".
Needle does not set down on 10" record in proper position (refer to exploded view).	1. Pickup arm not adjusted properly.	See "Adjustments". (a) Loose nut (26) on pickup arm shaft and sleeve (89).
	2. Pickup arm shaft and sleeve (89) binding.	File off burrs and rough surfaces. Polish and lubricate shaft.
	3. 7" set-down lever (74) and 12" record selector (32) not operating properly.	Insure that the proper operation and reset of the 7" set-down lever (74) and 12" record selector (32) is not being interfered with.
	4. Needle bent.	Replace with new needle.
	5. Wire spring (58) broken.	12" record selector (32) does not cock; check for broken 12" record selector spring (58).
	6. Bent pickup arm return locator (68).	Straighten or replace.
	7. Bent trip finger cam (89).	Straighten or replace.

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SYMPTOM	CAUSE	REMEDY
Needle does not set down on 12" record in proper position (refer to exploded view).	1. Diameter of 12" record undersize.	The set-down position of the needle for 12" records is determined by the edge of the record striking the 12" record selector (32). If a 12" record has a diameter of less than the standard size of 11-7/8" plus or minus 1/32", it may fail to depress the 12" record selector far enough.
	2. Enlarged center hole in record.	An enlarged center hole might fail to set the 12" record selector because it could produce the same effect as a small record.
	3. Pickup arm not adjusted properly.	See "Adjustments" Page 8.
	4. Binding of pickup arm shaft and sleeve (89).	Clean and polish shaft (89), and lubricate with light oil.
	5. Reset lever spring (77) broken.	Replace spring (77).
	6. 12" record selector spring (58) broken.	Replace spring (58).
	7. 12" record selector (32) binding.	The 12" record selector must be free to operate smoothly. Clean out dirt and straighten if bent, or replace.
	8. Bent pickup arm return locator (68).	Straighten or replace.
	9. Bent trip finger cam (89).	Straighten or replace.
Needle does not set down on 7" record properly.	1. 7" set-down lever spring (73) broken or weak.	Replace.
	2. Pickup arm not adjusted properly.	See "Adjustments" Page 8.
	3. 7" set-down lever screw (76) loose.	Tighten.
	4. 7" set-down lever (74) hitting frame or baseplate where it goes through hole in frame.	Straighten or replace.
	5. Reset lever (78) bent.	Replace.
	6. 7" set-down lever (74) does not fall into opening in main gear.	Replace.
	7. Bent pickup arm return locator (68).	Straighten or replace.
	8. Bent trip finger cam (89).	Straighten or replace.
Changer does not cycle when record has been played.	1. No finishing trip groove on record.	Check record for eccentric trip groove in center of record. Some old records and home recordings do not have this eccentric trip groove.
	2. Needle jumps out of grooves in record.	(a) Check trip pressure; the lateral pressure should not exceed 3 grams. If pressure is excessive, see "Changer Trips Before Needle Reaches End Of Record".
		(b) The record may be defective; the finishing groove is often too shallow. Check with a record that is known to be good.

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SYMPTOM	CAUSE	REMEDY
		(c) The needle point may be damaged or affected by an excessive accumulation of dust, lint, etc.; check needle pressure as described under "Adjustments".
		(d) There may be binding in the pickup arm shaft and sleeve assembly (89) or between the pickup arm return locator (68) and the trip finger cam (89); see "Needle Does Not Track Across Record".
	3. Trip pawl binding on gear face.	The trip pawl must be free to move forward and engage the boss on the turntable hub when the trip lever releases it. Check for burrs or foreign matter lodged between the trip pawl and main gear (92). Do not oil as this might collect dirt and gum up the pawl.
	4. Trip finger cam (89) bent.	Straighten or replace.
	5. Trip link (98) bent.	Straighten or replace.
Changer trips before needle reaches end of record.	1. Hole in record too large.	If the hole in the record is too large, the groove may turn eccentric with the spindle and cause premature tripping.
	2. Binding of trip link (98).	With the trip link released, check the trip link for freedom of motion. It should be free to move without binding.
Needle does not track across record properly.	1. Needle may be clogged by accumulation of lint, dirt, etc., or worn.	(a) Clean foreign material from around needle.
		(b) Check needle to see if the tip is bent or broken. Replace, if necessary.
	2. Trip finger cam (89) does not disengage from the pickup arm return locator (68) when cycle is completed.	There should be a 1/32" gap between the trip finger cam (89) and the pickup arm return locator (68) when the machine is not in cycle. If the gap is small enough to allow the parts to touch and bind as the needle moves across the record, the locator plate separator (89A) may be weak or broken. Replace.
	3. Check the bearing in the pickup arm post for binding.	(a) Check pickup arm return locator (68) and trip finger cam (89) for binding. (See 2 above.)
	4. Changer not level.	See "Leveling Record Changer" Page 2.
	5. Pickup leads too tight.	Give the pickup leads enough slack to allow the tone arm to move freely across a record.

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Ref. No.	Part No.	Description
1	5348	Record Support Assembly
1A		2903-G Plastic Knob
2	5681	Washer, Cork
3	6194-A	Turntable and Hub Assembly
4	1650	"C" Washer-Turntable Retainer
5	6206	Spindle & Bearing Assembly
		Consists of
		6207 Spindle Assembly less
		Ball Race and Washers
6		2078 Snap Ring
7		6204 Bearing Washers
8		6205 Bearing (Ball Race)
9		1529 Record Pusher
10		6207 Spindle Body & Base Assy.
11		1527 Pusher Spring
12		2552 Pusher Shaft Spring
13		2539 Pusher Shaft & Housing Assy.
14	6135-J	Tone Arm
15	4922	Hinge Button
16	4923	Pivot Screw
17	2255	Lock Spring - Lift Screw
18	2912	Lift Screw
19	6203	Tone Arm Weight Adj. Spring
20	6114	Weight Adjustment Slide
21	6253	Lock Washer, #3 Internal Tooth
22	6738	Weight Adjustment Screw, 3-48 x 5/16 B. H. Mach.
23	2720	Tone Arm Socket
24	6131	Cover Plate
25	2932	Screw, #4 Self Tap
26	3887	Jam Nut
27	4937	Safety Spring
28	3888	Lockwasher
29	4339	Safety Plate
30	5254	Lift Pin & Nut Assembly
31	6198	Hinge Assembly
31A		Set-Down Adj. Screw (Part of Item 31)
32	2957	12" Record Selector
33	101	Screw 10-24x3/8 Sems B. H.
34	4433-G	Reject Knob & Shaft Assembly
35	2558-G	Tone Arm Rest Post
36	4476	Speed Control Knob & Shaft Assy.
37	31	Washer-Record Support Thrust
38	5349	Record Support Return Spring
39	2110	"C" Washer-Record Support Assy.
40	4454	Shut-off Bracket Assembly
41	4857	Screw, #6-32x3/8
42	4453	Shut-off Spring
43	2937	Washer
44	4449	Screw, 10-32x3/16 Pan. Hd. Phillips
45	4445	Spindle Well
		4446-V Spindle Well Cap.
		4447 Hinge Pin-Spindle Well
		4448 Hinge Spring-Spindle Well
46	2916	Screw-#10x1/2 Rd. Hd. Type 25 (Rest Post)
47	6127	Motor Control Lever
48	2594	"C" Washer-Speed Control Shaft
49	6158	Motor Control Rod
50	4436	Switch Control Lever
51	1975	Pal Nut
52	4438	Shut-off Rod
53	2952	Fibre Washer-Tone Arm Thrust
54	1652	"C" Washer for Item 63
55	1720	Speed Nut for Mounting Item 58
56	4172	Compression Spring for Item 32
57	1588	"C" Washer for Item 32
58	2563	12" Record Selector Spring
59	6404	Die-Cast Frame
60	1719	"C" Washer-Main Gear Assy.
61	2580	Rubber Bumper
62	3901	Reject Spring
63	2284	Control Shaft Assembly
64	101	Screw-#10-24x3/8 Sems B. H.
65	467	Switch
66	4938	Return Spring-Tone Arm
67	2931	Fibre Insulating Strip-Switch
68	6405	Locator Plate-Tone Arm Return
68A	4950	Fiber Washer
69	5828	Retaining Ring-Locator Plate
70	2573	Switch Cover
71	4212	Retainer-Switch Cover Hold Down
72	2208	Pal Nut-1/2x20 - Spindle Mounting
73	2579	Spring-7" Set-down Lever
74	2581	7" Set-down Lever
75	492	Washer-Flat Steel-7" Set-down Lever
76	4856	Screw #6-32x5/16 Type 23 Hex Hd.
77	2925	Spring-Reset Lever
78	2560	Reset Lever
79	492	Washer-Flat Steel-Reset Lever
80	4856	Screw #6-32x5/16 Hex. Hed.
81	2935	Shut-off Link
82	2579	Spring for Shut-off Lever
83	4013	Shut-off Lever Assembly
84	4947	Bearing Plate for Item 83
85	2932	Screw #4-40x1/4 Hex. Hd.
86	2932	Screw #4-40x1/4 Hex. Hd.
87	4811	Muting Switch Assembly
88	2932	Screw #4-40x1/4 Hex. Hd.
89	4745	Trip Finger Cam & Shaft Assy.
89A		Locator Plate Separator (Part of Item 89)
90	3962	Lift Pin Spring
91	1588	"C" Washer-Lift Pin
92	5043	Main Gear Assembly
93		1588 "C" Washer
94		4172 Spring
95		5339 Pawl Lever
96		5338 Spring
97		2569 Trip Lever Assembly
98	4998	Trip Link
99	1588	"C" Washer-Slide Retainer
100	4747	Slide Assembly
101	5291	Bearing & Spring Assembly
102	4856	Screw #6-32x5/16 Hex. Hd.
103		Escape Lever (Part of Item 100)
104	2585	Escape Lever Spring
105	2274	Flat Washer
106	4856	Screw #6-32x5/16 Hex. Hd.
107	101	Screw #10-24x3/8 Sems B. H.
108	2571	Ejector Link Assembly
109	6208	General Industries Turret Motor 110V-60C
110		6673 Pulley 78RPM
111		6674 Pulley 45RPM
112		6675 Pulley 33 1/3RPM
113		2772 Idler Wheel
114		2765 Lever Grommet
115		6670 Idler Arm Tension Spring
116		6170 Idler Wheel Arm Assy.
117		4087 Shift Tension Spring
118		3294 Hairpin Clip-Idler
	6100	45RPM Spindle-New Type
		Consists of
119		6104-A4 Spindle Cap
120		6097 Spindle Clamp
121		6089 Separator Blade
122		6093 Bolt Return Spring
123		6102 Actuator Lever Assy.
124		6088 Bolt
125		6093 Bolt Return Spring
126		6087 Spindle Body
127		5245 Screw, 4-40x7/8 Fil. Hd. M. S.
128		6094 Fibre Washer
129		6096 Rotor
130		5068 Spring-Rotor Lift
131		6095 Rotor Lift
132		6099 Retainer
	5140	45RPM Spindle-Old Type
		Consists of
133		5138-A4 Spindle Cap
134		6382 Spindle Clamp
135		5461 Spring-Slide Return
136		4469 Slider Plate Assembly
137		4465 Upper Blade-offset
138		4464 Upper Blade-plain
139		4462 Lower Blade-bottom
140		4463 Lower Blade-top
141		4473 Spring-Lower Blade
142		4468 Spindle Body Assembly
143		5245 Screw-4-40x7/8 Fil. Hd. M. S.
144		5506 Washer-Fibre
145		4457 Rotor
146		5068 Spring-Rotor Lift
147		5069 Rotor Lift
148		4459 Bottom Bearing